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VOLUME XV.
NUMBER 7.

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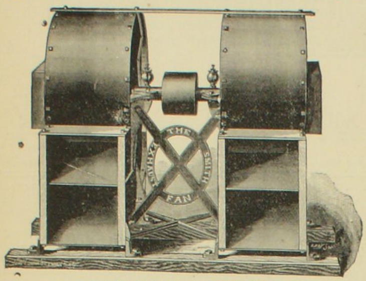

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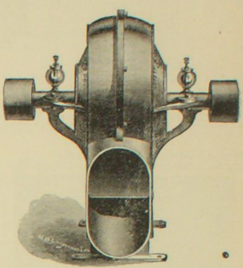

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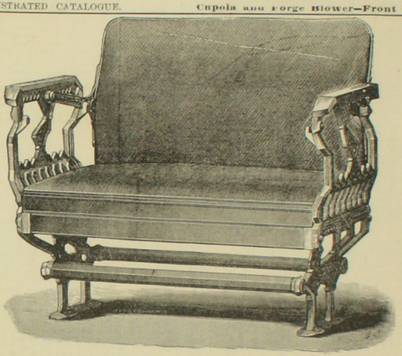

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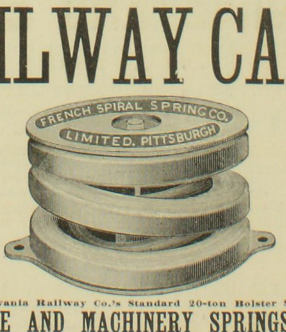

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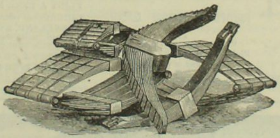

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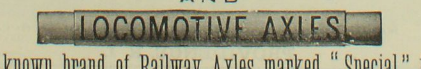

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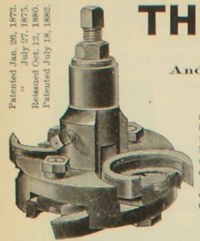
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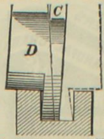

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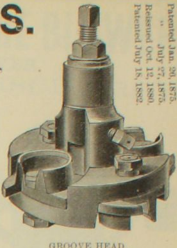
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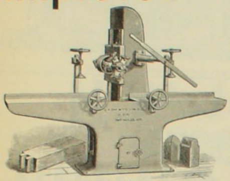

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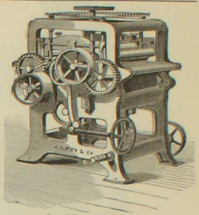

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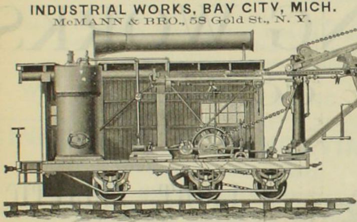

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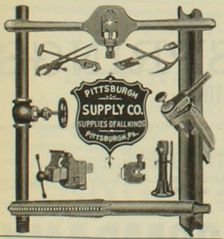
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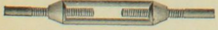

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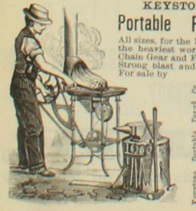

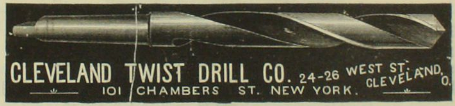

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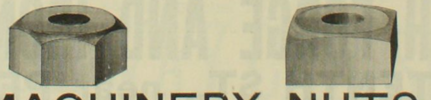

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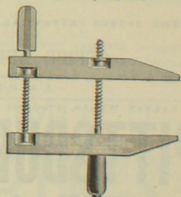

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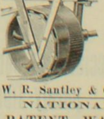

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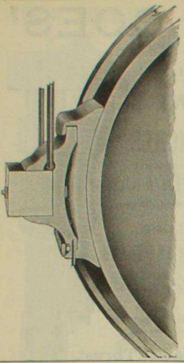

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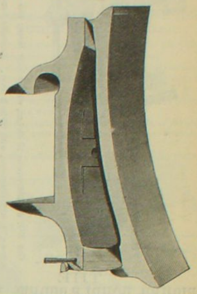
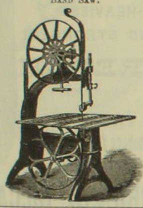
2. *There is the greatest cooling space.*
3. *The BEARINGS being at the EXTREME ENDS of the brake head, the pressure is at the most desirable points.*
4. *There is the least possible friction, and, consequently, less wear on the brake heaa.*
5. *The shoe itself is the only detachable part.*
6. *It can be taken off DIRECTLY from the side.*
7. *It can be changed without any slackening of the brake rods, and where the shoe swings close to the wheel, as when atmospheric brakes are used.*
8. *There is no interference with the flange of the wheel when the shoe is being removed or replaced.*
9. *A change can be effected in the least possible time.*
10. *The shoe and head can be cast without extra cost.*
11. The head weighs several pounds less than the head of the well-known "Christy" shoe, to say nothing of the expensive wrought-iron curved key used with the Christy.
12. *The fastening is permanent.*
13. *It requires no special fitting, as it can be made of any ordinary rod.*
14. *There are no pins or keys to be fitted, and*
15. *None to be lost or removed when the shoe is changed.*

Sample Shoes Sent on Application. Correspondence Solicited.



Band Saw.



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The Latest Improved **MACHINERY** for Railroad Car Shops.

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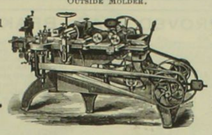

Planers, Vertical Car Tenoners, Gaining, Tenoning, Rotary Mortising Machines.

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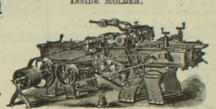
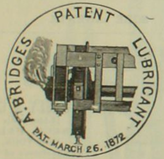


C. B. ROGERS & Co., MANUFACTORY, NORWICH, CONN. WAREROOMS, 109 Liberty St., New York.



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BRIDGES' LUBRICANT

FOR RAILROAD CAR JOURNALS AND OTHER BEARINGS.

SAMPLES FURNISHED GRATIS. SEND FOR CIRCULAR.

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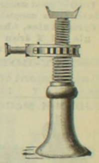

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PAYS FOR ITSELF EVERY YEAR.

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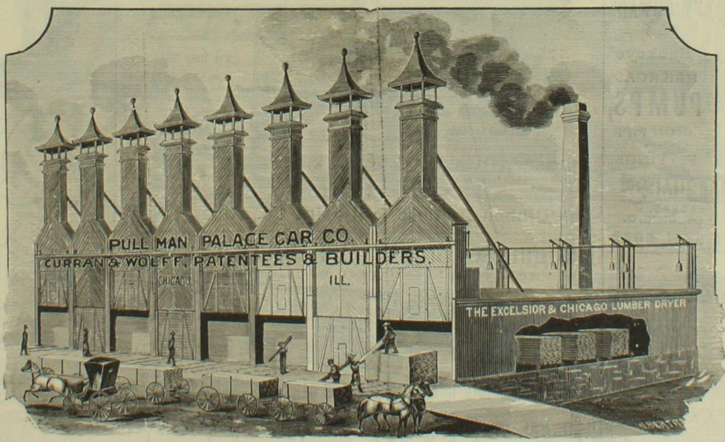
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CURRAN & WOLFF, PATENTEES & BUILDERS.
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THE EXCELSIOR & CHICAGO LUMBER DRYER

DRYING 8,000 FEET PINE LUMBER

EVERY 24 HOURS.

RAILROAD COMPANIES AND CAR-BUILDERS WHO ARE USING THE EXCELSIOR AND CHICAGO LUMBER DRYER:

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Norfolk & Western R. R. Co., Roanoke, Va	2	Louisville & Nashville R. R. Co., Louisville	2	Southern Car Co., Car-Builders, Knoxville, Tenn	1
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Flint & Pere Marquette R. R. Co., Saginaw, Mich	1	Ohio Falls Car Co., Car-Builders, Jeffersonville, Ind	2	Peninsular Car Works, Car-Builders, Detroit, Mich	2
C., M. & St. Paul R. R. Co., Minneapolis, Minn	2	Barney & Smith Mfg. Co., Car-Builders, Dayton, O	4	Northern Pacific R. R., Brainerd, Minn	2
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Messrs. Curran & Wolff, City:

Gentlemen: In reply to your favor inquiring as to the two Dry Kilns you built for us two years ago, we take pleasure in saying that they have given us entire satisfaction.

We are drying upward of ten thousand feet of inch boards in each Kiln every twenty-four hours, and the lumber comes out of the Kilns free from checks or damage of any kind resulting from the process.

We have concluded to build another of your Dry Kilns, finding them indispensable in our business, and we do not see how any one doing business requiring a large amount of lumber can get along economically without them.

Yours truly,
THE WELLS & FRENCH CO.
H. L. Norton, Sec. and Treas.

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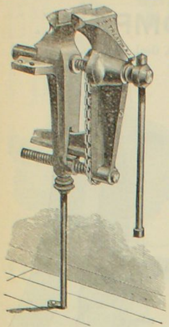

Our NO. 6 VISE opens 10 inches, with 8-inch Jaws; has solid forged screws 1¾-inch diameter, with 26-inch lever. We make 5 smaller sizes of same pattern. Special discounts to R. R. Companies and Car Companies on application.

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FISHER DOUBLE-SCREW VISE.
Fully Warranted.
Stronger than any other Leg Vise
AND ALWAYS PARALLEL.
The Best Vise for R. R. Machine Shops and Car-Builders, and for all heavy work.
Accurate and Durable.
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Bar Iron of great strength and uniform quality
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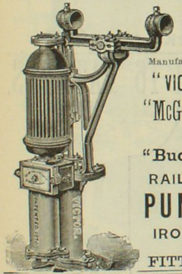

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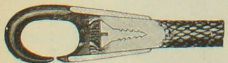

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All the main features, such as leveling car, turn table, self-adjustable step for vertical post, twenty feet hoist, working over embankments, swinging load—car body or more—direct on to freight car, hinged jacks, direct grapples to rail, and other important features, all perfected and patented by Jewett, foreman of a wrecking gang for many years. For further information apply to the builder,

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Notice.—To build an efficient wrecking car, many of the main features of this car would have to be incorporated into it, which would be an infringement of my patents. Such cars are being built by the undersigned (having special tools for the work) at very reasonable prices, and no charge made for the patent rights, which would have to be paid for by the user if made by an unauthorized person.
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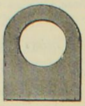

HARD & FLEXIBLE VULCANIZED FIBRE.
Flexible Vulcanized Fibre Dust Guards
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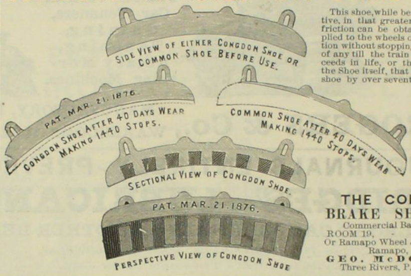
CONGDON'S IMPROVED CAR BRAKE SHOE.


SIDE VIEW OF EITHER CONGDON SHOE OR COMMON SHOE BEFORE USE.
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CONGDON SHOE AFTER 40 DAYS WEAR MAKING 1440 STOPS.
COMMON SHOE AFTER 40 DAYS WEAR MAKING 1440 STOPS.
SECTIONAL VIEW OF CONGDON SHOE.
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PERSPECTIVE VIEW OF CONGDON SHOE

This shoe, while being more effecttive, in that greater uniformity of friction can be obtained when applied to the wheels of a train in motion without stopping the revolution of any till the train is at rest, exceeds in life, or the durability of the Shoe itself, that of the cast iron shoe by over seventy-five per cent.

Its durability, together with cheapness and simplicity of construction, recommend it in preference to any other in use.

All communications should be addressed to
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Or Ramapo Wheel & Foundry Co.,
Ramapo, N. Y.
GEO. McDOUGALL,
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THE GIBBON BOLTLESS RAIL JOINT CO.
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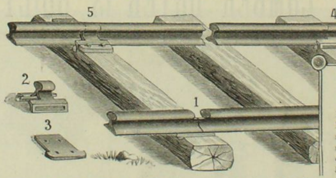

To Lay Track:
First, place the Rails No. 1, then put down No. 2 on No. 1, as shown in No. 4, slide No. 3 into No. 4; spike down, and Joint is complete, as shown in No. 5.

The most perfect rail joint in existence. Combines all the Desirable Features of the Old Chair Joints and Modern Angle Plates, and has none of the Objectionable Features of Either.

NO BOLT HOLES!—No Low Joints!—No Creeping of Track or Spreading of Rails! ☞ Will save a Large Sum Annually in Track Maintenance, as IT DOES AWAY ENTIRELY *with the labor of tightening up and renewing Bolts and Nuts.* ☞ For full particulars, report of Tests, etc., address

The Gibbon Boltless Rail Joint Co., Albany, N. Y.

Manganese Bronze and Brass Castings,
STRONGEST AND BEST IN THE MARKET.
FOR
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MASTER CAR BUILDERS STANDARD.

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MANUFACTURED BY
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ROCKING GRATE-BAR CO.,
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Are doing all you claim for them, in use some ten months and clean no fires where they are. Putting them in all engines as fast as they come in the shop. We run our engines the long run, 228 miles, and when they get through the fire is as clean as when starting out. Ten months in use.
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PATENT SCREW
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MANUFACTURED BY
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ENLARGED
BAR JAW AND SHANK,
FERRULE MADE WITH
DOUBLE BEARINGS,
Iron Tube Fitted to Shank, held rigidly in position by handle and nut.
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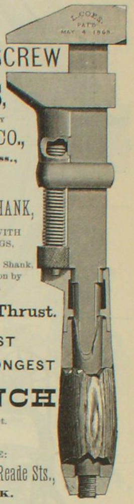

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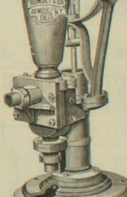

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Manufacturers of over 800 Different Styles of
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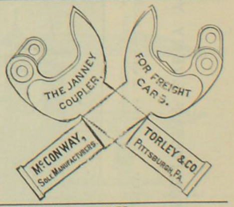
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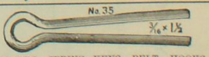

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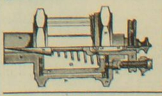

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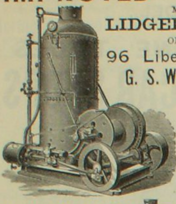

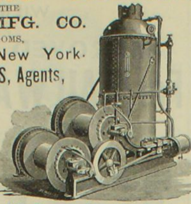

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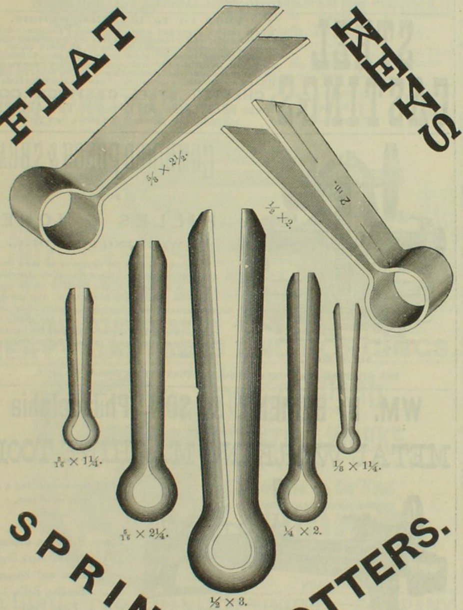
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2 in.
½ × 2.
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5/16 × 2¼.
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ALL SIZES OF SPRING COTTERS AND FLAT SPRING KEYS
MANUFACTURED BY
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CHICAGO SPLICE BAR MILL.
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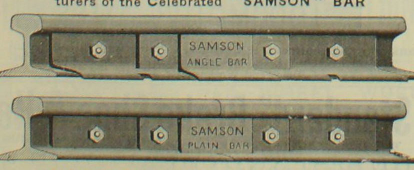
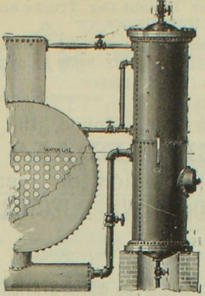


And Every Variety of Plain and Angle Splice Bars.
OFFICE, 6 ASHLAND BLOCK........... Mill, Chicago Ave. and the River...... CHICAGO



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FEED-WATER PURIFIER.
(Patented March 13, 1883.)

Advantages claimed for **STILWELL'S FEED-WATER PURIFIER** over all others:

1. It does purify the feed-water and deliver it to the boiler freed from scale-producing elements and sediment.
2. It supplies the boiler with feed-water of about the same temperature as the water in the boiler, which at 90 lbs. pressure, is about 320°, thus preventing the danger arising from unequal contraction caused by injecting feed-water of a lower temperature than the water in the boiler.
3. It can be used equally well with all kinds of boilers, high or low pressure, and whether a steam engine is used or not.
4. It can be used to advantage following feed-water heaters of any kind.

MANUFACTURED EXCLUSIVELY BY
Stilwell & Bierce Manufacturing Co.,
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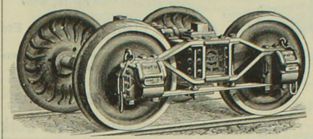

THE THIELSEN TRUCK CO.
142 Dearborn St.,
CHICAGO, ILL.

We respectfully refer you to the following railroads using this Truck:
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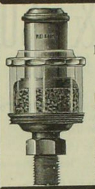
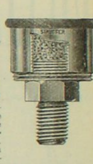
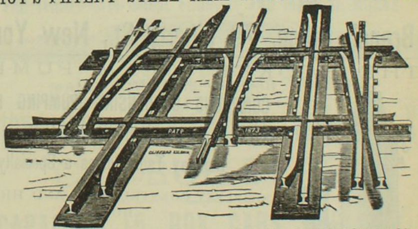


A. EDW. BARTHEL,
ENGINEER,
111 LIBERTY STREET, NEW YORK. P. O. Box 2837.
SOLE MANUFACTURER OF THE
REISERT, STAUFFER AND BARTHEL
LUBRICATORS AND SOLIDIFIED OIL.

The most economical, perfect, practical, simplest, cheapest and elegantly finished Lubricators ever put on the market. One million sold within a couple of years. The **Barthel Solidified Oil or Lubricating Compound** is used with the **Lubricators** exclusively. Whoever has once tried this Lubricant will never again use oil or any other lubricating compounds. Send for Illustrated Catalogue.

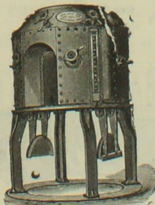


ELLIOT'S PATENT STEEL RAIL FROGS AND CROSSINGS.



These Frogs and Crossings are made of steel rail, combined with a wrought-iron frame, and bound together transversely with strong bolts, which gives them great strength and durability without destroying their elasticity. They are connected at all ends by Fish-Plate Joints, and lie on the same tie surface as the running rail without any cutting of ties, thus saving a great deal of time and labor in putting in place on track.

Manufactured by ELLIOT, FROG & SWITCH CO.,
East St. Louis, Ill.



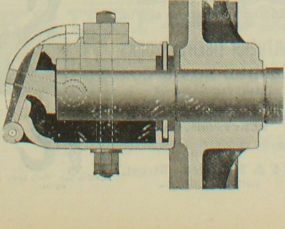
Important to all Iron Founders.

The COLLIAU IMPROVED CUPOLA

EXCELS ALL OTHERS IN ECONOMY OF FUEL and rapidity of fusion, avoids delays by not "clogging" or "hanging," and may be run continuously; especially adapted to Car-wheel and Car Casting Manufacturers.

Awarded Silver Medal at Chicago Exposition, June, 1883.
Estimates furnished and correspondence solicited.
Write for Descriptive Pamphlet and mention this paper.

COLLIAU FURNACE CO.,
DETROIT, MICH.



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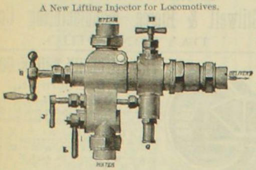

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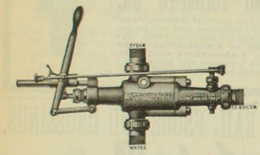

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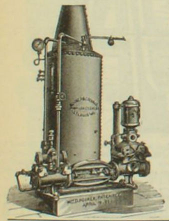

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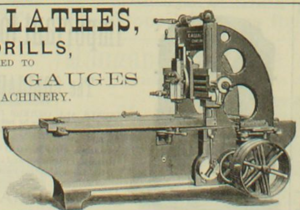

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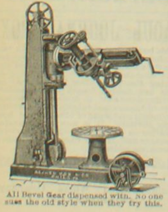

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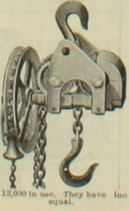

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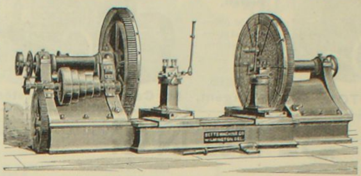

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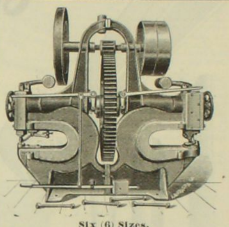

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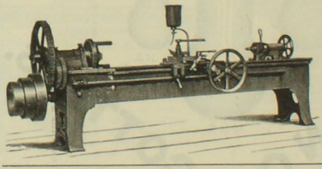

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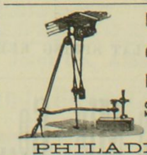

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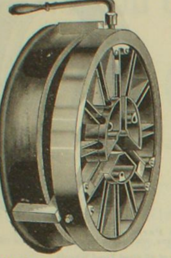

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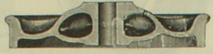

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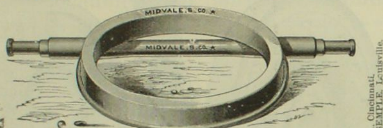
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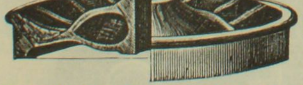

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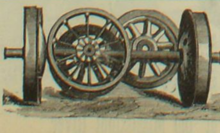

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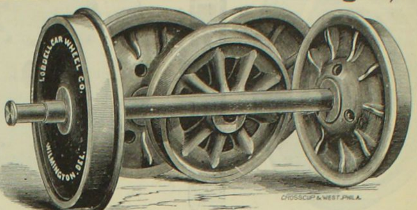
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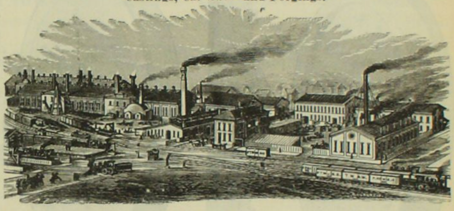

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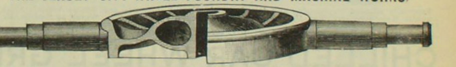

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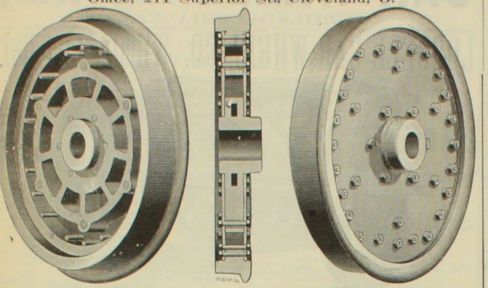

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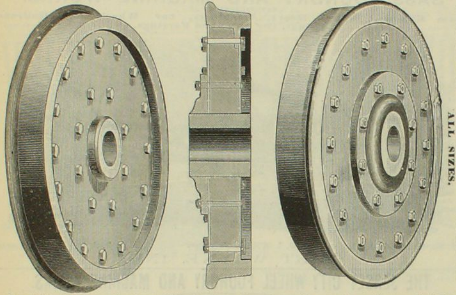

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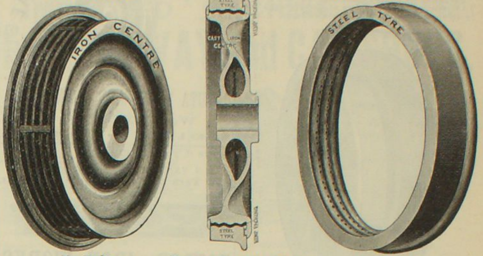

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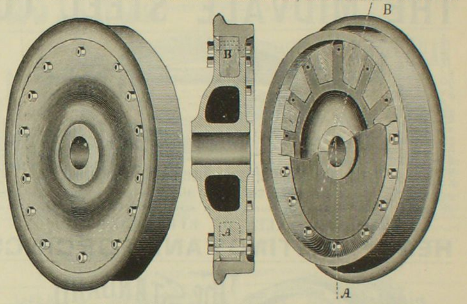

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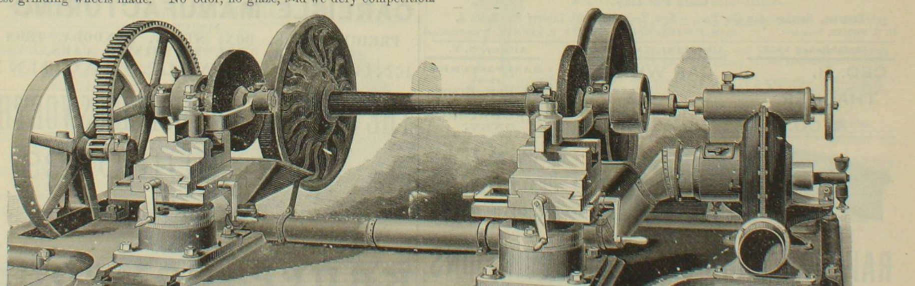

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It will True (boring simultaneously) a chilled iron wheel in less time and deprive its tread of less of its integrity than any other Truing Machine in existence.

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It will Bore a Chilled-Iron or Steel-tired Wheel *without truing the tread,* or True the tread *without boring;* embodying in combination, or independently, all the requisites of a Boring Mill, Chilled Car Wheel Grinding Machine and Tire Lathe.

Master Mechanics and Master Car-Builders fully appreciate the following Facts:

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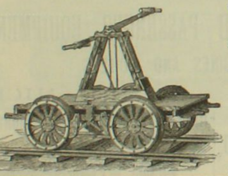

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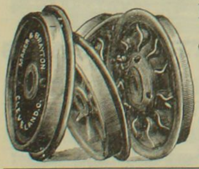

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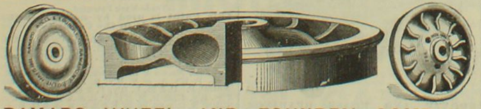

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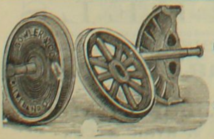

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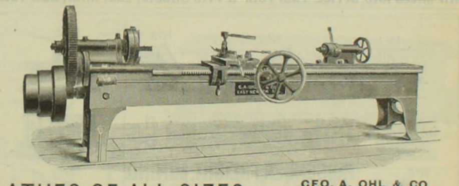

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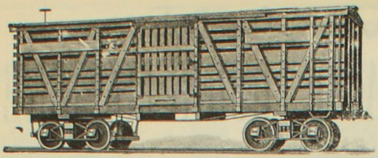

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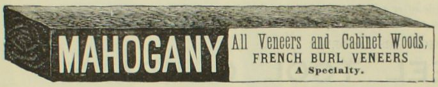

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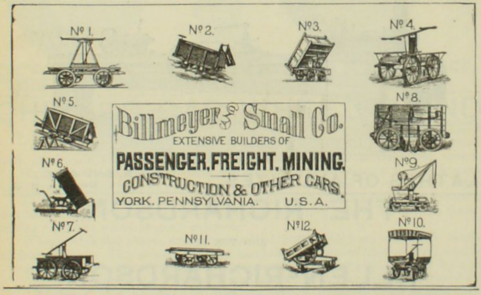

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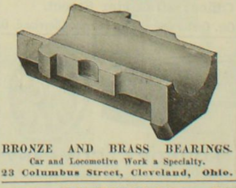

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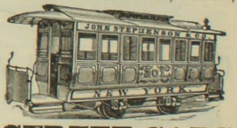

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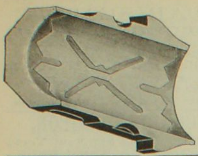

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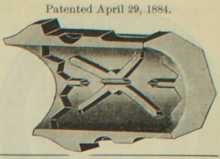

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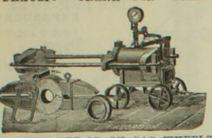

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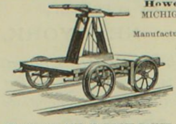

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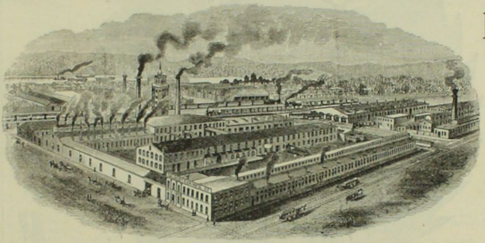

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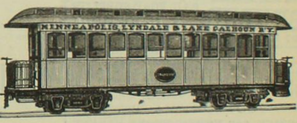
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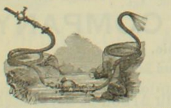

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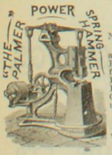

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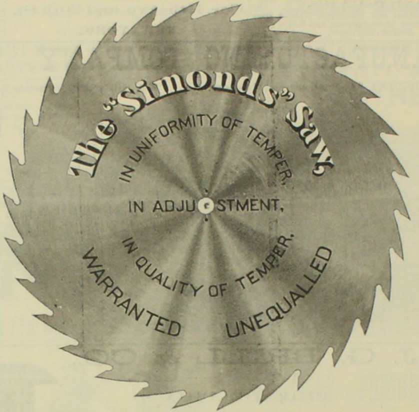
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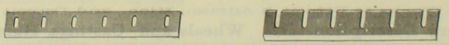

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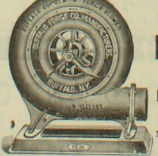
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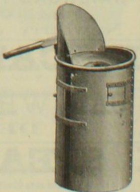

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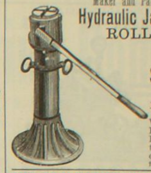

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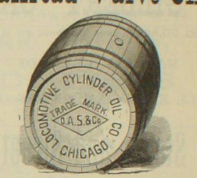

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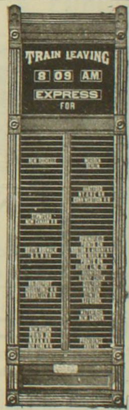

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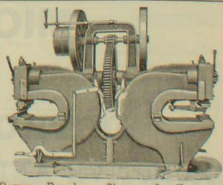

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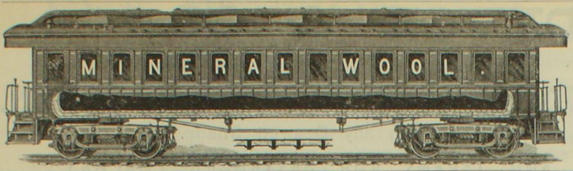

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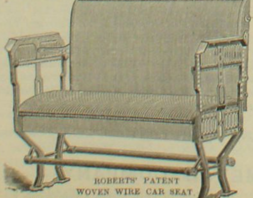

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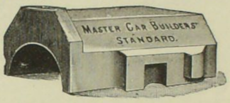
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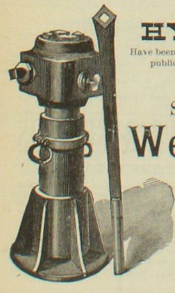

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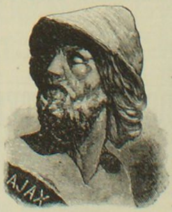

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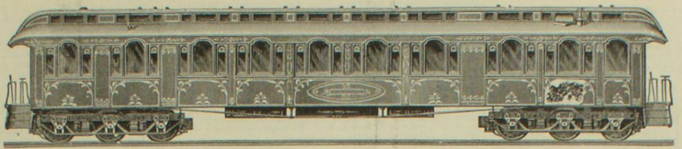


DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

VOLUME XV. NUMBER 8.

AUGUST, 1884.

SINGLE NUMBERS, TEN CENTS, $1.00 PER ANNUM.

Miscellaneous Items.

THE Roanoke Machine Works at Roanoke, Va., employ 750 men. The capacity of the works is ten freight cars per day and three locomotives per month.

THE Fitchburg Railroad Co. have built during the present year 18 standard passenger coaches, all of which are now in service. The inside finish is in solid mahogany.

THE Old Colony Railroad Co. are about to build 20 box cars, and will also build 12 first class passenger coaches before the close of the year. All of these cars will be built at the South Boston shops.

AT the Allston shops of the Boston & Albany road 30 Lincoln stock cars are in process of construction. They will have suspension trucks and steel brake-beams, and also some additional improvements devised by the railroad company.

MR. T. L. WILSON, Port Hope, Ont., has patented a safety truck-lock which is designed to prevent the slewing around and upsetting of cars when derailed. A test of the invention was made on June 18 in the presence of a number of the officials of the Canadian Pacific and others, which is said to have been very satisfactory.

THE C., C., C. & I. road is building at its Cleveland shops three mogul engines of the road's standard pattern. They have 18 × 24-inch cylinders, 56-inch driving wheels and weigh 42 tons, and will be finished during the summer. The road built 15 engines last year, but the lighter traffic this year renders but little new construction necessary.

MR. F. K. HAIN, General Manager of the New York elevated railroads, says, that since March, 1880, all renewals of car and engine wheels on these roads have been made with Allen paper wheels, and that there are now 576 cars and 220 engines equipped with them, making a total of 5,408 wheels, and thus far there have been no failures. The trains average 60,000 stops and starts per day.

MESSRS. H. & H. ELLIOT, of East St. Louis, Ill., manufacturers of Elliot's patent railroad crossings, frogs and switches, have sold their interest to the newly organized "Elliot Frog & Switch Company." The old copartnership was formed ten years ago, and the circular of the new company announces that they have recently made some improvements in frogs and switches that will be appreciated by their patrons.

ON all European railways there are first, second and third class fares for passenger traffic; the third-class fares yield the largest margin of profit. During the last ten years the rates have been generally reduced, and it has been found that the reduction has invariably increased traffic enormously, even peasants, who formerly did not dream of traveling, indulging in the luxury of riding behind the iron horse.

THE last three cars built by the Jackson & Sharp Co. for the Mann Boudoir Co. have 42-inch wrought iron center spoke wheels, with steel tires secured by Mansell's fastening, supplied by W. R. Ellis, the New York and Boston agent for the Patent Shaft and Axletree Co., of Wednesbury, England. These cars are named respectively "Martha," "Aïda" and "Etelka Gerster." The first two are to be placed on the New York, New Haven & Hartford line between Boston and New York.

MR. TWOMBLY, the General Master Mechanic of the Chicago & Rock Island road, is building at the Chicago shops six four-wheel coupled tank engines for switching purposes. The have 44-inch wheels, 15×24-inch cylinders and 42-inch boilers. As a commentary on the uselessness of large cylinders with small boilers, an engine of this description weighing 30 tons has hauled from the Chicago stock yards to the shop yards of this road a train of 80 loaded cars, the length of the train being just half a mile. The question is, Why should the cylinders be enlarged as long as the engine can slip its wheels with cylinders of the usual size?

THE West Milwaukee shops of the Chicago, Milwaukee & St. Paul road, are finely located as respects convenience and yard room. Most of the shops are connected with each other by board walks 43 inches wide laid at the shop floor levels, upon which small trucks can be used for transporting materials in various directions. The machinery is driven by a 36 × 36 inch beam engine running 68 revolutions per minute. The tumblers for cleaning tubes are placed under the floors next the ground, which has the effect of deadening the noise and avoiding the inconvenience of having them a greater distance off.

THE car shops of the Illinois Central road, at Chicago, are now completing a lot of 50 fruit cars of a pattern which has been widely copied with slight modifications. The pattern was designed by Mr. W. B. Snow, the Master Car-Builder of the road. A considerable number of the ordinary box cars of the road has recently been changed into fruit cars. The original order was for 500, but a much smaller number will probably be found to answer. The shops have just finished 50 Tiffany refrigerator cars; also 13 passenger cars, 48 feet long and seating 58 persons each. The latter are of the road's standard pattern. Its suburban traffic is large, and 50 cars have been built for this service within the past three years. They are similar to those of the New York elevated roads.

THE railroad yards of Chicago have altogether some 300 miles of track. Yard-engines have often to go 18 or 20 miles from home and thread a perfect maze of switches and crossings. The engines get off on foreign roads and are at times practically in foreign service. All the time-tables of all the Chicago roads have to be at the fingers' ends of the men in this service. The very best and most experienced men are wanted, and for this work a man has to have more experience than is needed to enable him to go upon the road. Many of the engines do always part of their service away from home. The railroads have to keep from one to three engines on duty at the stock yards all the time in order to handle the business. Besides this, there is the bulk of freight, meat, fertilizers, etc., which has to be distributed. Altogether the service is quite unique and very exacting.

THE Chicago shops of the Chicago, Rock Island & Pacific road are busy with a variety of work, including freight cars and some very handsome chair cars. A directors' car has just been completed, and although it is not an expensive car of its class, it is to all appearance equal to some of the best nickel-plate work turned out by the contract shops. It is a rule of the shop that all cast-iron wheels for passenger cars must not weigh less than 600 pounds. The axles used are the M. C. B. standard, except that their centers are 4 inches in diameter, with a regular taper from the wheel seat. Mr. Verbryck, the Master Car-Builder, has established a shop rule which is worthy of mention. On Saturdays all the machinery is stopped 20 minutes before closing time, and the interval is occupied in making such minor repairs, etc., as may be needed, and 8 minutes are devoted every evening to cleaning tools and putting things in order for the following day.

THE West Division Street Railway Co., of Chicago, has some of the handsomest cars that are to be found upon any street road in the country. Mr. McDevitt, the master car-builder of the line, was the first, we believe, to use Lincrusta for car decoration. He uses it now exclusively for head-linings, and it makes a very beautiful ceiling. By taking different patterns of the material and using borders around panels, very pleasing effects are produced, and it is impossible to see the joints. Each panel lining looks as if it was made to order. In the raised roof, when there is no center light, a large central medallion is introduced, or two medallions on each side of the center light when there is one. Under the main roof one, two or three medallions are used with good effect. The linings are handsomely painted and bronzed. The cars ride very easily, the spring motion being all that can be desired. Even where there are inequalities in the track there is no jarring or pounding. This result is attained by the use of special springs made to order and carefully adjusted to the weight carried, whether the car is loaded or empty.

THE West Milwaukee shops of the Chicago, Milwaukee & St. Paul road are building four 60-foot baggage-cars. They have four side and two end doors, the former being near the ends of the car, leaving the side trussing between the bolsters nearly unbroken. The outside sills are 5×8, and the center and intermediates (two of each) 4¼×8. The sides are sheathed with white pine. The clear-story does not extend the whole length of the body, but only within three carlines of the doors. The carlines are of ash, with molded edges intended to show on the inside, there being no sheathing. The cars of this road are kept in first-rate condition. None of them are kept in service until the paint on them begins to suffer for want of varnish. The paint is not allowed crack in the corners. The cars are revarnished as soon as the painter thinks they need it, and his idea as to how long they should run before they need it decides the point. The frequent revarnishing keeps the paint solid at the bottoms of the windows next the posts, and this keeps the water out. Some of the cars put into emigrant service are as good as those used on eastern roads in suburban traffic.

MR. TWOMBLY, the General Master Mechanic of the Chicago, Rock Island & Pacific road, paints all the work on his engines which is usually left bright, such as connecting rods, side rods, edges of the yokes, outside edges of the guides, rocker-arms (which are of cast steel) valve rods, etc. The color chosen is a French gray so near the color of finished iron that, at the distance of 25 or 30 feet, very few persons would notice the difference or could even distinguish a painted engine from one that was not painted. The main and parallel rods are not finished, but are left precisely as they come from the hammer. Practically, the only objection to this is that cracks or cold shuts appear, but these do not show in finished work. The painting has an advantage in keeping the parts clean with much less expenditure of labor, and it retains the skin of the iron intact, an advantage which some engineers consider very important. The guides are finished in a rather peculiar manner. They are planed and hardened, and then ground upon an emery wheel to finish and straighten. They are not touched with a file. The cheapness of this plan makes a marked saving in cost over the ordinary method. The painting of bright work upon engines of roads running out of Chicago is becoming very common, its advantages having brought it into use.

THE Wason Manufacturing Co. is building two dining cars to run between Worcester and New Haven in the New York and Boston day train. The Springfield Republican says: These cars will cost about $12,500 each. They are 71 feet long over all, and 9½ feet wide. This extra length is used in spite of the great proportional increase in dead weight and consequent shortening of the car's life, because it allows more luxurious interior arrangements. The dining saloon is in the center of the car, and is 30 feet long, finished in mahogany throughout, with floors of 2-inch maple and cherry, and is upholstered in green leather. There are five tables on each side, with a total seating capacity of forty persons, and at the side of each table is a wide plate-glass bevel-edged mirror reaching to the top of the car. At the side of each seat is a window with a double pane of plate-glass below and stained glass in the upper sash. Each section also has above it a two-light oil lamp, and hinged opera chairs will be used to allow more convenient access to the tables. The Mann system of ventilation is one of the features of this saloon, as by it ventilating windows in the car roof are done away with, and outside air is forced by the car's motion through a dust filter, and in summer through several layers of cracked ice at registers placed below each table. In winter a coil of steam pipe is substituted for the cracked ice. Between the dining-room and kitchen is a 10-feet butler's pantry, with a handsomely carved and ornamental sideboard facing toward the saloon, and containing cupboards, ice-box, carving tables, coffee urns and other necessities. From this a two-feet passage leads to the end of the car, and the only entrance into the kitchen, with the exception of a place to pass dishes through, is from the platform, thus avoiding the smells from the cooking. The kitchen is 16¼×6¼ feet, and contains a 72×30-inch range, with warming tables, ice-boxes and sinks. There will also be an ice-box on the platform, and two refrigerators underneath the cars. The kitchen is finished in cherry and maple. At the other end of the car are the ordinary wash-room, heaters, etc. The cars have the Mann solid arch roof, which does away with the usual clear-deck for ventilating transoms, and they are hung on eight sets of quadruple cast-steel springs. Two six-wheel trucks, having 42-inch steel-tire paper wheels, form the running gear. About a dozen men will be employed on each car.

Proceedings of the Master Car-Builders' Convention at Saratoga.

(In Continuation).

The Committee on Standard Appliances for Safety of Trainmen being called on for a report,

Mr. Kirby said: If I understand the matter rightly I was a committee of one to prepare a circular to present to railroad managers and others with the view of recommending them to adopt those standards which had been prescribed by the Association, but it is so difficult for myself or any other man to know what our standards are that I refrained from taking any action. I do not know that we have got anything but an axle, a journal bearing and journal-bearing key. I guess that is about all the standards we have. As to the other appliance recommended by the committee at Chicago in 1879, there are a few roads that have adopted it. For instance, I find a new car down here, built by our worthy President, with the handles vertical and no handle on the other corner for the yardmen to take hold of. I think the recommendations of that committee were that the handle should be placed horizontally and that there should be another handle on the opposite corner for the men to take hold of while they are following the car and pulling the pin with the other hand. If the members of the Association themselves do not adopt these recommendations, I do not know that it is worth while to present them to the general managers and superintendents. On that ground the committee has not any report to make. We were all of us aware that some changes would have been recommended at this meeting which would place any report that this committee could have made in rather an embarrassing position. For instance, at our meeting yesterday we took back some things that we voted on at other meetings. Now that those things are corrected, such a committee can act more understandingly than they could before.

The committee was continued.

PIECE WORK IN BUILDING FREIGHT CARS.

The committee on this subject made the following

REPORT:

Your committee appointed to make a report on Piece-work in Building Freight Cars would respectfully submit the following:

The following circular of inquiries was sent out:

To the Members of the Master Car Builders' Association:

1. Have you ever built freight cars by letting out different portions of the car by the piece? If so, did you find that the work could be done cheaper than if done by the day?
2. Would you recommend letting out the whole car to one man or letting different portions to different men, or would you let out the wood work to one and the iron work to another?
3. In your opinion would the same shop room and facilities produce more work if let out by the piece than by the day?
4. Please state how, in your opinion, the work would compare if done by the piece with that done by the day.
5. If you have built freight cars by piece-work and found it cheaper than to build them by the day, please state as near as possible how much less per car (taking box cars for example) they can be built for than if built by the day.

Nineteen replies were received to this circular, as follows:

1st Question: 14 answer that they have never built freight cars by piece-work; 3 answer that they build cars by piece-work and find it costs less than by the day; 1 answers that he does not build any new cars at his shop, but all repairs are done by contract; 1 answers that he does not at present build any cars by piece, but that on a road he was formerly connected with they built by piece-work and found it could be done much cheaper than by the day.

2d Question: 15 answer that they would recommend letting out different portions to different men; 3 answer that they would not recommend letting out cars by the piece in any manner; 1 answers that as he has never built cars by piece-work he cannot give any information on the subject.

3d Question: 12 answer that more work would be produced by the same shop-room and facilities if let out by the piece than by the day; 4 answer that they would not; 2 don't think it would make any difference.

4th Question: 8 answer that the work should be as good if done by the piece as by the day if properly inspected; 4 answer that it would not be as good; 1 that piece-work would not compare by 20 per cent. with work done by the day; 1 answers that days' work should be 25 per cent. better; 1 does not favor piece-work at all; 4 do not answer this question.

5th Question: 8 answer that they cannot tell, as they never built cars by piece-work; 1 that the work can be done 35 per cent. cheaper by the piece than by the day; 2 25 per cent. cheaper; 1 from 15 to 20 per cent. cheaper; 1 from 5 to 25 per cent. cheaper, according to facilities; 1 $2 per car cheaper; 1 $5 per car cheaper; 1 $8 to $10 per car cheaper; 3 do not answer this question.

As none of your committee have had any experience in building cars by piece-work they have thought it best to submit a synoposis of the replies received to circular of inquiries with some extracts from the few answers received from those who have had experience in contracting out cars to different parties.

One writes that he was employed a few years ago in a contract shop, and that the first year he was there all the cars were built by day's work. The second year all the work was done by the piece and he had it done 25 per cent. cheaper and just as well; that it did away with a vast amount of contention among the men, as each man was paid according to his ability and the amount of work he performed; that the men did not look around the shop for an easy job, as formerly, and were not as anxious to hear the whistle blow as they were when they worked by the day, etc.

Another writes that he is building freight cars by letting out different portions to different men, and the work can be done from $8 to $10 per car cheaper than by day's work; that the work will compare favorably with work done by the day, but it must be properly inspected.

Another writes that he would recommend that all new work in repair shops be done by the piece, and thinks it could be done with economy if there was a sufficient quantity of work to keep a gang of men constantly employed, and can see no reason why the work should not compare favorably with day's work if done under proper supervision.

Another writes that he does not build any new cars at his shop, but all repairs are done by contract, that his men work in gangs of four to do the wood work, and the iron work is also done separately by contract, that he can in this manner turn out about 30 per cent. more work than by the day's work system. That the work done in this manner is just as good, as he has good inspectors, and if the work is not done properly they have to do it over again at their own expense.

Another writes: We build freight cars by letting out different portions by the piece, and find that the work can be done cheaper than by the day, and says he estimates that it will cost about $2 per car less than if built by the day (which your committee consider rather too small a margin to make it of much account).

Another writes that he has been building freight cars by the piece for the last ten months, and finds that it can be done cheaper than by the day by letting out different portions to different men, that an ordinary box car can be built at least $5 cheaper than if done by day's work.

Another writes that on the Pennsylvania Railroad, with which he was formerly connected, they found that the work could be done much cheaper by piece-work than by the day; that they found the best results could be obtained, not by letting out the whole or portions of the car by contract, but to have a price for each detail of work, as, for instance, a certain price for draft iron brake-rods, follower-plates, turning up axles for fitting wheels, for casting journal-boxes, centre-plates, columns, slides, etc. He is of the opinion that piece-work could not be advantageously introduced in planing mills, but after all the material is brought together by laborers a certain price can be assigned for erecting the car, another for fitting it with doors and another for painting, each man to be paid by the company for the work he performs, with the exception of the erecting gangs, which would be composed of from three to six men, who would receive their money in bulk to be distributed among themselves, and that piece-work carried on in this manner, in his experience increases the amount of work turned out, and if properly inspected will be more satisfactory than when done by the day, and can be done about 35 per cent. cheaper.

Another writes that he would compare the work done by the piece with similar work done by contract builders under a low contract, plenty of it, such as it is. He thinks that day work will produce the best results for the company.

B. K. Verbryck,
W. B. Snow,
John Kirby.

Mr. Verbryck: I have no doubt that we could build cars cheaper by letting out different parts than to build by the day's work. I see no reason why it could not be done as well under proper supervision. I have never so far brought this to a system in my shops. I do not know but I may do so at some time. Others have had experience in that line, and I would rather hear from them. I would add that I have, in building freight cars, given our men so much time for their work. I have found that they would put them up more quickly.

The Committee on Plans for Car Shops and the Arrangement of Car Shop Machinery was called on to report, but the chairman, Mr. Blackwell, said that owing to the failure of members to answer circulars there was no material out of which to make a report. A short discussion ensued, in which the opinion seemed to prevail that the subject was not a suitable one for the Association to inquire into. A motion was made to continue the committee, and lost.

The report of the Committee on the Lettering and Numbering of Line Cars was taken up and the recommendations of the committee agreed to with the following amendments: The words, "followed by the word 'Owners," were stricken out of Rule 1. Rule 3, applying to Fast Freight Line cars, was amended by adding the words, "the marks at end of car shall give initials of car, the number of car, and the light weight." The same amendment was also made to Rule 3, in reference to cars that are not in Fast Freight Line service. [See report of committee in July Car-Builder, page 85.]

Resolutions were adopted instructing the Secretary of the Association to publish, as a part of the Treasurer's report, the names of all persons and the amounts paid by them to the Association; and that the names and votes of members voting on questions that are decided by letter-ballot, shall also be published.

FREIGHT CAR FRAMING AND TRUSSING.

The report of the committee on this subject [See July Car-Builder, page 84], was taken up and discussed, but much that was said had reference to three models furnished by the committee and representing different styles of freight car body framing. In the absence of drawings a full report of the discussion would not be intelligible, and we only give so much of it as does not relate specially to the models. In reference to iron body bolsters:

Mr. Kirby said that instead of making them of one piece, they should have two pieces. If the bolster iron was 8 inches wide, he should make two bars 4 inches wide, and spread them perhaps 2 feet apart, supporting the end of the car against the continual tendency to break off at the bolster.

Mr. Wilder: The experience on our line with iron body-bolsters as they are now made, is that they are too narrow, and if we are going to use them they should be made in two pieces, placed wide apart, and welded together with lateral connections. In almost every instance in which I have examined cars with iron bolsters they have been loose on the frame, the difficulty being in keeping the nuts tight. In narrow bolsters the nuts are started by suddenly stopping the car, and also by the action of the brakes. The plan suggested by Mr. Kirby would certainly give greater stability to the bolster as well as help support the end of the car.

Mr. Cloud: I wish to call attention to the fact that there are three cars here sent by the committee on the subject of a "60,000-pound house car," and I wish to say personally that I think the proper framing is shown in these cars, and that the other members of the committee, perhaps, think very much the same way. It seems to me that with the loads we are now carrying, and the heavy trains that are running, the panel should be braced in both directions. One of these three cars has a full-fledged Howe truss. The other two have Pratt trusses. They have double diagonal tie rods on a vertical brace. This is what might be called a half Howe truss. It is somewhat of a mongrel, because it has the vertical brace as well, but it needs the other brace in my judgment, because it is subjected to these heavy shocks of buffing. I do not mean the pulling of the engine, but the buffing, which is much more severe. That being so, and the endwise pressure of the car, and especially the inertia, if it has an upper deck loaded with sheep or hogs—its weight has considerable leverage on this point, and when you hit that car heavily its whole weight tends to go forward. In other words, the under frame is knocked out from under it. It seems to me that all these forms will allow this distortion to the most marked degree perhaps in a double-decked car load of stock, and the only way properly to protect it from this distortion is to make each panel of itself a stiff panel. That may be done in two ways; by making a full Howe truss or a full Pratt truss. Personally I prefer the Howe truss, the braces perhaps preferably to run by one another, and be secured practically at the point of intersection. We have been working that matter up for the past year and a half, and in the first instance we made a car which was a model in the side framing of the Howe truss. We considered that better than the Pratt, but we used the old thickness of braces, and put the counter-brace in against the shoe; fastened on the main brace without cutting the main brace. That car went into service and has been in service for eight months, and has stood very well. But we have now improved on those plans, and have used wider braces, and let them pass by one another. We have constructed a car on that principle. It has not been in service long, but is very much preferred to the first style. In constructing a car, as we have it now, the plates and side sills are drilled to templet. The braces and counter-braces are all cut off in the mill. There is no boring diagonal holes, and there is no doubt of its coming up tight.

The discussion was continued at considerable length and with frequent references to the models, at the conclusion of which

Mr. Wall said: These two committees, one on the 60,000-pound car and the other on the framing, seem to have been overcome with so much courtesy toward each other that neither of them could submit anything in a yes-or-no form. What we want, as I understand it, is a frame that the committee can say they recommend. Then we can come here and criticise it. In that way we can come to a standard on the house car. If this thing is to continue year after year, we will never come to any conclusion. We should instruct these committees to make a report that will meet their own views. If they can't agree, let them report to that effect.

The two committees were then consolidated and continued another year as one committee, with instructions to report a standard frame for freight car bodies.

STANDARD FREIGHT CAR TRUCK.

The report of the committee on this subject was taken up [See report in July Car-Builder, page 85.]

Mr. Miller, the chairman of the committee, wanted an expression of opinion in regard to a rigid frame, swinging bolster, and other important points in the construction of freight trucks. The railroads of the country were looking to the action of the Car-Builders' Association with the expectation of getting some kind of a standard.

Mr. Verbryck, of the Chicago, Rock Island & Pacific, thought that he had a pretty fair freight truck on the cars of his road, but was ready to adopt and commence the building of such a truck as the Association might recommend.

Mr. Miller said that the committee had not recommended any standard in its report, for several reasons. The Association had not decided what the standard carrying capacity should be, nor the rate of speed at which freight trains should be run. The committee was unanimous in the opinion that the trucks now used were not what would be required in the near future.

Mr. Wilder wanted to know if, in case a truck should be adopted for a 60,000-pound car, another standard would be necessary for cars of a less capacity. He did not believe that the cars of the future in this country were all to be 60,000-pound cars. There were a great many reasons why they should not be, and these reasons could not be got around, mechanically at least. Such cars would require the size of journals, weight of wheels, etc., to be entirely different from what they are now.

Mr. Verbryck agreed with Mr. Wilder that a 60,000-pound car was not needed at the present time. That amount of weight could not be got into a car in the case of merchandise and a great deal of miscellaneous freight. Before increasing the capacity of our cars we should have heavier rails and stronger bridges.

Mr. Keeler thought a truck suitable for a 40,000-pound car would, with some minor changes, do for a 60,000-pound car. So far as castings, oil-boxes, brakes, etc., are concerned, it was advisable to adopt a standard now, and railroad managers were all looking for it, and they think it is child's play to keep putting it off from year to year.

Mr. Cloud: The reasons given in the reports for abandoning wooden-framed trucks are not such as to convince me that such a course would be the proper one. I think that in order to get at this matter gradually, we had better agree that certain features should be embodied in the trucks without going into matters of detail or size or anything of that sort. I think it would be wise for this Convention to express its opinion one way or the other on the question as to whether freight-car trucks should have the ordinary diamond frame now in use. The report of the committee is against the continuation to a certain extent of that frame. It seems to me that the ease of repair to that truck, the service it has given and the increased loads it has carried above what it was designed for, all go to show that it is a decidedly good form of truck. Perhaps many of us are in favor of swing bolsters, and many are in favor of rigid bolsters. I therefore think that a truck frame should be decided on by a vote, and in words, not giving sizes, but describing the type of frame which may be used, with swinging bolster or rigid bolster, with very slight modifications. It is not a matter of very much consequence to say whether anybody uses the swinging bolster or anybody uses the rigid bolster, provided the truck frame is the same. In order to adopt a rigid bolster it would seem almost necessary to have cross channels. I say channels, because I suppose that trucks will be built nearly all of iron. I therefore move that it is the sense of this Convention that a standard freight car truck should be of the diamond form. By that I do not necessarily mean that the upper and lower parts of the diamond should be of the same shape at all, but of that form, and that it should have cross channels so that it may be used with a swinging or rigid bolster.

Mr. Wilder: In seconding the motion I would say that I fully agree with Mr. Cloud in regard to the utility of the diamond truck. It has been our standard truck for a number of years, and I think that the ease of repairs, the efficiency of work and everything about it, mark it as the best type of truck now in use. There are some weaknesses about the frame as now made, particularly stiffness of the upper arm of the truck, which is not strong enough to stand the compression strains. But that is easily remedied by putting in a heavier bar, and the truck, if properly made, will seldom break down, even when carrying as high as 40,000 pounds.

Mr. Kirby: After thirty years' experience, I can see no good reason for discarding the diamond form of truck with its rigid center. We all know the weak parts in it, and these can be strengthened. I do not see why we should run after some new and untried thing, and abandon an old thing that has done our work ever since railroads have existed.

Mr. Miller: All passenger cars are made with swing bolster trucks. If there is no advantage in such trucks why are they used under passenger cars? We must determine whether we are going to increase the blows on the rails or adopt some improvement to lighten the blows. These things were considered by the committee.

Mr. Mackenzie: We have about 7,000 cars on the New York, Chicago & St. Louis, and they are all 40,000-pound cars. The average load on our line does not exceed seven tons per car. Our road is a new one, with not much local business, it is true, but it seems to me quite unnecessary to have an extraordinarily heavy truck to carry seven tons.

Mr. Davenport: It is not likely that the swing-motion men are going to give up their swing-motion ideas, nor the rigid truck men their rigid-truck ideas. We might as well, then, concede to each his peculiar views, and modify if possible the arch bars and those parts of the truck that can be used in either case. We have found out through this Association, by experiments, that the upper member of the diamond truck needs to be strengthened, and that the lower or center member has a surplus of strength. For instance, when we use an inch arch bar for the top we do not need an inch inverted bar. If we were to take ⅛ of an inch from the inverted bar and add it to the upper bar, we would not increase the weight of iron. If we proportion these parts rightly, I think we can have a 20 or 25 ton car without any difficulty. I am not going to say anything against a wider arch bar; 1×3 inch has been the ordinary size. Now if we make the upper bar 1⅛×3, and the inverted bar ⅞×3, and the lower bar ½×3, you have got a truck that will do an immense amount of work with a minimum of dead weight and expense.

The question was then taken on Mr. Cloud's motion, and carried, viz.: That it is the sense of the convention that a standard freight car truck should be diamond in form and have cross channels so that the same frame could be used with swing or rigid bolster.

Mr. **HACKNEY** moved that a vote be taken to ascertain the sense of the convention as to whether a swing or rigid bolster is to be preferred, the vote resulting in favor of a swing bolster by 32 to 30. It was also voted that a 5-foot wheel base would be accepted.

The following propositions were then successively made and acted upon, and so far as can be gathered from the reporter's notes, are virtually instructions to the committee:

1. Whether a change from 3⅞ to 4¼ inches diameter of center of the standard of the M. C. B. axle be submitted to the Association by letter-ballot. This was seconded, but no vote upon it seems to have been taken.
2. That the committee be instructed to use the M. C. B. standard journal box and bearing for cars not exceeding 40,000 pounds carrying capacity. Carried.
3. That the diameter of 4⅜ inches inside the wheel seat be omitted by the committee from the axle which it shall propose for the new standard freight truck. Carried.
4. That the form of the axle be left discretionary with the Secretary of the Association, who is to submit a diagram of it with the letter-ballot. Carried.
5. That the committee be instructed to embody in the new standard truck an arrangement of brakes from the cross pieces between the wheels. Carried, 24 to 7.

Mr. **WALL** then moved that a committee be appointed on the axle and size of journal bearings, and that the committee on a standard truck incorporate the recommendations of such committee in its report. This motion, he said, was made to ascertain the sense of the Convention as to whether the members think the size of the M. C. B. journal should be increased for cars of more than 40,000 pounds carrying capacity. A vote was taken, and it was decided in the negative, which was understood to mean that it was the sense of the Convention that the present M. C. B. journal was not large enough.

The following question was then proposed: "Is the M. C. B. journal large enough for cars of 40,000 pounds capacity?" Upon this there were 36 affirmative and no negative votes.

The question was then proposed, "Is the center of the present M. C. B. standard axle large enough for cars of 40,000 pounds capacity?" upon which there were 34 negative and no affirmative votes.

It was then voted that two additional members be appointed on the committee on Standard Freight Car Trucks, the said committee to present at the next annual meeting a plan for a truck embodying the suggestions above made as the sense of the Convention.

AUTOMATIC FREIGHT CAR BRAKES.

The report of the committee on this subject [see July CAR-BUILDER, page 85] was taken up.

Mr. **MCILWAIN** thought that railroad companies were not yet ready to decide upon the question of automatic freight brakes for the reason that *the* automatic brake had not yet made its appearance.

Mr. **FORNEY** thought it was very desirable to have a more full report on the subject. He had been told by Mr. Geo. Westinghouse, Jr., that 30,000 freight cars would soon be equipped with the Westinghouse automatic train brake, and as these cars are on roads with which the members of the present committee are not connected, he would move that the committee be discharged and a new one appointed. Agreed to.

Mr. C. E. **GAREY** said that the Reed and Tallman automatic brakes had been in use on his road for several years and both were doing very well. Still, he agreed with Mr. McIlwain that there might be a better yet to be forthcoming.

Mr. **HACKNEY** had put about 800 Westinghouse brakes on the freight equipment of the Atchison, Topeka & Santa Fe, and they had proved to be a perfect success on the Denver & Rio Grande.

Mr. G. W. **RHODES** had fitted up 50 cars of the C., B. & Q. road with this brake as an experiment, and found it to work well on a train of 25 cars. The only trouble he had had with it was owing to the ignorance of the men in regard to its construction and management.

Mr. **CLOUD**: We have 75 cars running with this brake on the Pennsylvania road. They have been running a good deal in trains together. We have run 50 cars over the mountains without any difficulty whatever. I have been on those trains frequently myself to see how they worked. The brake does not work as smoothly, of course, on a train of 50 cars as is desirable. We have no difficulty at all in running it on 25 or 30 cars, with the ordinary link and pin coupling. We find by the substitution of the automatic coupler, which did not allow much slack between cars, that the length of train which could be run by this brake without too severe jarring of the rear end, was increased somewhat. We have experimented with a number of brakes and have found that buffer brakes as a class soon reach their limit of usefulness, especially if there is no winding mechanism. We have also tried the Rote brake and tested its maximum power by taking out and testing the spring rigged in the brake chain, but that power would probably be zero at the end of a train, so that half of it only would be the average. Buffer brakes can simply help stop a train under favorable conditions, but in an emergency they are of no use unless there is some one to work them.

After some further discussion Mr. Wall offered a resolution declaring that it is the sense of the Association that none of the freight train brakes so far brought to its notice, which derive their power through the compression of the draft springs, fulfills the requirements of a good freight train brake.

The resolution was adopted by a vote of 20 to 11.

PASSENGER CAR FRAMING AND TRUSSING.

The report of the committee on this subject being called for,

Mr. **BISSELL**, the chairman of the committee, said: I have been unable to get sufficient data in time to submit anything new either in plans or models to express the opinion of the committee, and therefore have no formal report to make. I have some plans that I have received from different roads, but there is such a wide difference in regard to the amount of material that should be put into a frame, and the form in which it should be placed, that it seems almost impossible to reconcile the diversity. We have, for instance, a road using the Blackstone coupling, which requires more strength in the framing of the car to keep it in line than the Miller coupling. Then there seems to be a radical difference in the way of attaining the strength. Some roads use no bracing whatever, but suspend their cars with rods. Others use no bracing except what is required by ceiling the car longitudinally on the outside and placing the panel work over it, and some object to using anything but whole timbers in long cars. Others admit splicing, some admit a truss-plank and others object to the use of it, so that there is a great variation of plans even among the few that we have received. We have plans that embody the views of a part of the committee, at least, and which are sufficient to hold the car in line under all ordinary service. Mr. Miller and myself have spent some time in visiting the different yards of railroad companies to see the condition of their passenger cars, and it is a matter of fact that there are very few cars that remain in line. The ends droop usually, and between the transoms they sag, and we find, too, that cars made in different shops and upon the same plan do not stand equally well. But there is no danger probably from breaking down. There is not as great a call for uniformity in the framing of passenger cars as in freight cars. Passenger cars are usually repaired and maintained by the companies owning them, and as there is not that necessity for a uniformity of framing, we considered it better to ask that we be discharged, and that another committee be appointed to report next year, than to submit anything that we now have.

The committee was continued.

FREIGHT-CAR ROOFS.

The committee on the subject made the following

REPORT:

Your committee appointed to investigate the subject of car roofs regret that lack of time, or rather the multiplicity of duties upon the part of the chairman has made it impossible to examine the subject as fully as could be wished.

The following circular letter was issued to the members of the Association, and replies were received from twelve members:

"Assuming that the first object of a roof upon box cars is the protection of the contents of the car from the elements, and second, to assist in giving strength and stiffness to the sides and ends of the car, and considering that car roofs are now commonly classified as follows:

"1. What are known as double-board roofs, with or without felt or other lining between the boards.

"2. Single-board roofs covered with tin or other sheet metal.

"Roofs made of metal sheets fastened to car lines, etc., and covered with single boards.

"Which of these forms of roofs, or others of which you may have knowledge, will best meet the following requirements, and what will be the relative cost and cost of repair?

"1. Absolute protection from dampness, caused by rain or snow.

"2. Least danger from being disturbed by wind.

"3. Least danger from being damaged by nails being driven into it and men running over it.

"4. Least danger from fire.

"5. Best style to give lateral and diagonal stiffness to the car top. Also, whether some plan of diagonal bracing or tie rods should not be adopted.

"Please send this committee drawings or points of such a roof as you would recommend as a standard, showing particularly the method of fastening to car-lines, ridge-pole, side-plates and end-plates, and also please state your reasons for recommending the particular style of roofing."

There is quite a diversity of opinion in regard to what style of roof is the best, many favoring double-board roofs, some with felting between and some without. Others prefer what is known as the Winslow roof, or one of similar construction, while the universal experience as expressed seems to be against what is known as "tin roofs," that is, single-board with thin metallic covering.

The question of cost will enter largely into the adoption of car roofs as a standard, depending to some extent upon where the cars are to be built. In a pine country where lumber is cheap, where good clear pine will not cost more than $30 per M., the double-board roof would probably be fully as cheap as the single-board with tin covering.

But where good pine is $40 per M. the roof will cost as much as the Winslow or other metal roof, with board covering.

It is the generally considered view by those who answered the circular that the roof should be diagonally stayed, although your committee has not found any road that has adopted any particular form of bracing.

We deem it almost absolutely necessary in cars having roofs with metal plates either above or below the boards, that the roofs should be stayed diagonally.

Cars have been found where the single boards were nailed on to the purlins in pieces running from one purlin to the other, being made up from the short pieces of waste from the sheathing of the cars. These cannot be seen when covered by tin, and as they give no stiffness to the car, the twisting of the roof about soon starts the joints in the metal cover and opens the seams to the elements, breaking off the nails and completely destroying the roof.

Mr. Robert Miller, of the Michigan Central Railroad, strongly recommends what is known as the "Hutchins roof," which is a double-board roof with a lining between the boards, made up of felt, canvas, and other materials.

Mr. Miller says that with this roof properly put on there is no need of any diagonal bracing, and it is found very effective in the repairs of old roofs.

No drawings were sent your committee, and we have not had time to design any roof which we would recommend; your committee would therefore ask that the subject be continued for another year.

And your committee would like a free discussion of this subject as a ground for their deliberations upon it.

F. M. WILDER.
R. C. BLACKALL.
D. HOIT.

The committee was continued.

AUTOMATIC FREIGHT CAR COUPLERS.

The report of the committee [see July CAR-BUILDER, page 85] was presented by the chairman, Mr. Marden.

Mr. **MARDEN** said that after long consideration the committee had found it to be impossible to recommend any one or two draw-bars for adoption by the convention, and could do nothing better than to leave the whole subject as to the merits and defects of different devices to be discussed by the Association.

Mr. **KEELER** suggested that the Association hire a commission of experts capable of making tests, such commission to designate a time for making them, and report the results to a special meeting of the Association to be called by the President some time the coming fall.

Mr. **ADAMS**, as one of the committee, said that the committee found it very difficult to agree upon any one or two couplers. He had no doubt that all the members of the convention had their minds made up as to the particular coupler they would be willing to adopt. The pressure that was being brought to bear upon the railroad companies in this matter by the State Legislatures rendered an early decision by the Association necessary. The State Railroad Commissioners were waiting for the convention to select a limited number of couplers that they would be willing to adopt as standards. He could not see any way to do this except to appoint a commission or expert to superintend tests and trials, and the members of the committee individually would suggest Mr. Forney as a suitable person to be appointed for that purpose.

Mr. **FORNEY** said he was not willing to accept such an appointment until the duties pertaining to it were more definitely determined. All were probably aware from experience what a weariness it was to listen to the inventors of car couplers, and if he was to be placed before the public as the person to whom all these cranks were to address themselves, it was really a very serious undertaking. He hoped the matter would be discussed by all the members in order to determine what should be done.

Mr. **ADAMS** said that the legislators, railroad commissioners and the public had got an idea that if automatic couplers were used nobody would get hurt on railroads, but losing sight entirely of the fact that such devices very largely increased the cost of repairs. An automatic coupler was not so much needed as a safety coupler. About nine-tenths of the couplers that are claimed to be automatic are not automatic at all.

Mr. **BLACKALL** suggested that no couplers should be tried until the validity of the patents had been passed upon by the Eastern and Western Railroad Associations.

Mr. **WILDER** spoke of the many things to be considered with respect to the functions to be performed by a car coupler, and especially the great difference in the cost, ranging as it did from five to fifteen dollars per car.

Mr. **WALL** said that a certain number of confusing questions were involved in the coupler problem, and the Convention could decide in respect to some of these at once. If not, then it might as well own up that it could not. In order to settle at least one of these questions, he moved that it is the sense of the Convention that any automatic coupler presented for its consideration should couple in a vertical plane, that is, it should be able to slide up and down.

Mr. **KEELER** moved to add, "and shall couple automatically in a link in one of the old fashioned draw-bars."

Mr. **ADAMS** said that a few years ago it had been strongly urged by the President (Mr. Garey) and others, that any coupler presented to the Association for adoption should be without pin or link, yet it was a fact that nine-tenths of the car-builders of the country were encouraging, and assisting to a very great extent in producing couplers with pin and link *both*, thus going back on our own action.

Mr. **WALL** said if his motion in reference to a vertical plane prevailed, it would dispose of the link and pin question, because the link and pin do not couple in a vertical plane.

Mr. **KEELER** said there were now in service about 800,000 cars that couple with link and pin, and there were a great many railroad companies at the West that would not adopt a draw-bar that dispensed with the link and pin, but they would take one that did not dispense with them. He did not mean couple automatically, but simply couple.

Mr. **WILDER** said if the motion prevailed, the Janney or some other coupler of that kind would have to be adopted.

Mr. **WALL** said there were several couplers of that kind. The Miller coupling was one of them, and that was the reason of its great success. Then there was the Cowell, and others whose names he could not recall.

Mr. **WILDER** did not think a very great deal would be gained by voting to establish this one principle, that the coupling should be performed on a vertical plane, which did not necessarily mean any of the devices of that kind now in use on passenger cars. As to the validity of the patents, that was in his judgment foreign to the question the Convention had to deal with. A coupler might infringe upon a dozen different patents, but if it was the one that was wanted, he did not think the Association had anything to do with the alleged infringements.

Mr. **CLOUD** thought the mechanical features were what the Association had to deal with, and it was really the most competent to deal with them.

Mr. **ADAMS** said the Wilson & Walker coupler furnished its own link and pin and coupled ordinarily well. The Ames coupler had been in use continually on 100 cars for over three years, and on 50 cars for over six years, and none of them had broken. With the Janney coupler a link and two pins must be used in coupling with the old bar. The same was true of the Cowell coupler. The cost of links and pins was a serious matter. It was clear that if the Wilson & Walker, or Ames, or Mitchell coupler were adopted, we should not need any links and pins after the old couplings were done away with.

Mr. **WILDER** said the New York, Lake Erie & Western road had adopted the Gifford coupler, which is automatic in every respect; 2,000 cars had already been equipped with it. If the Convention were going to recommend a certain number, he thought this one should be included.

Mr. **MILLER** believed the Ames or the Wilson-Walker coupler would do away with links and pins. Their record had certainly been good, especially that of the Ames.

The **PRESIDENT** had hoped the committee would have recommended in its report a certain number, not exceeding three or four, which would couple with each other and at the same time with the old couplers. It had, however, mentioned eight, but he did not for a moment suppose that these eight were put down in the order of merit as the committee understood them. But if the Convention could get down to eight that would couple with one another and with the old devices, it could by experiment be reduced to two or three, or even to one, and this would be what everybody is looking for. He would like very much to talk just as he felt on the subject, but he could not. Dilly-dallying would not answer. The Association must do something.

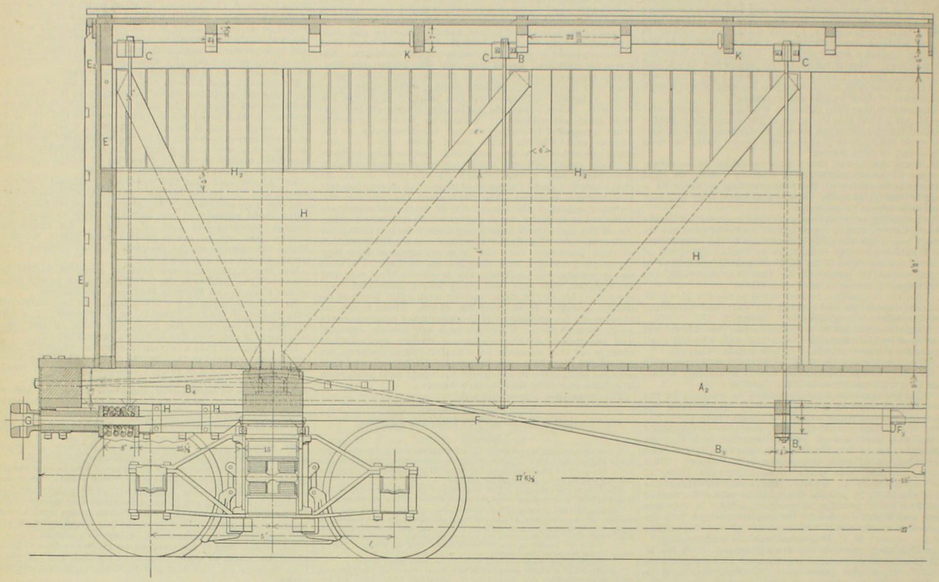
Mr. **ADAMS** understood Mr. Wall's vertical plan to be the hook motion. If this is what is meant, we do not want to make the mistake of adopting it.

Mr. **WALL**: It is not necessarily a hook, but may be several kinds of forms. It involves nothing in particular, except the principle of coupling on a vertical plane.

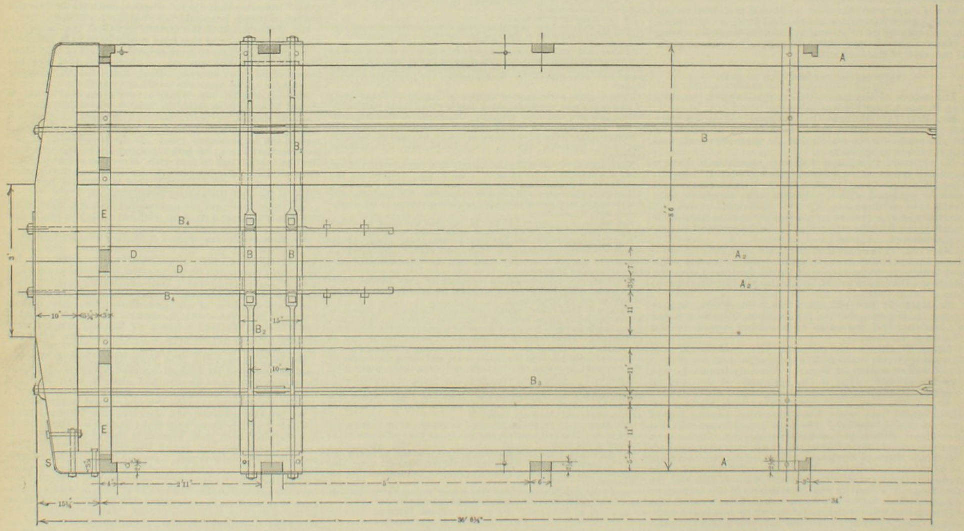
Mr. **CLOUD** moved to amend Mr. Wall's motion so as to read: "That it is the sense of this Convention that the best coupler, mechanically, is one which performs the

(*Continued on page* 100.)

STANDARD THIRTY-THREE FOOT HOUSE CAR OF THE



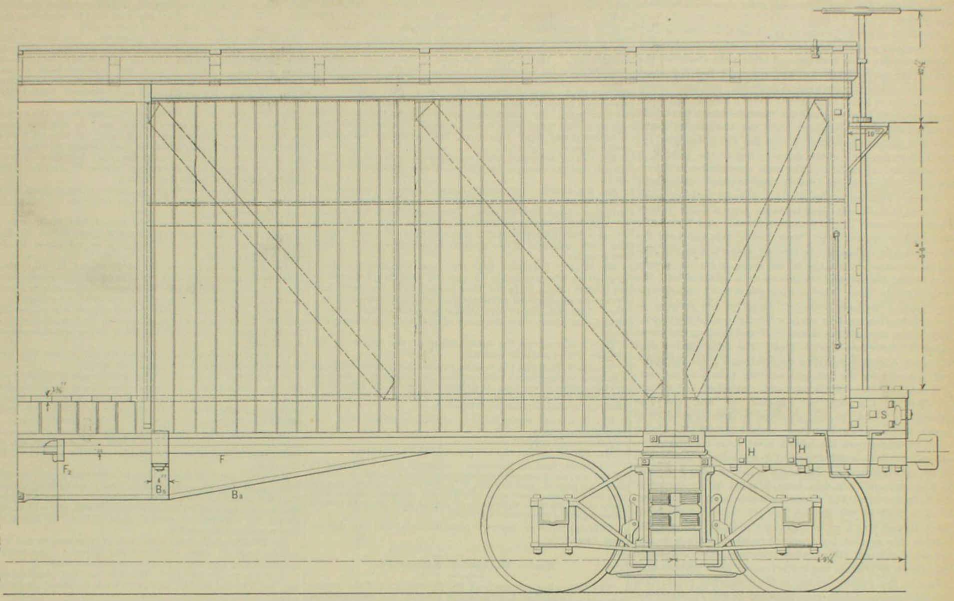
Half Longitudinal Section.



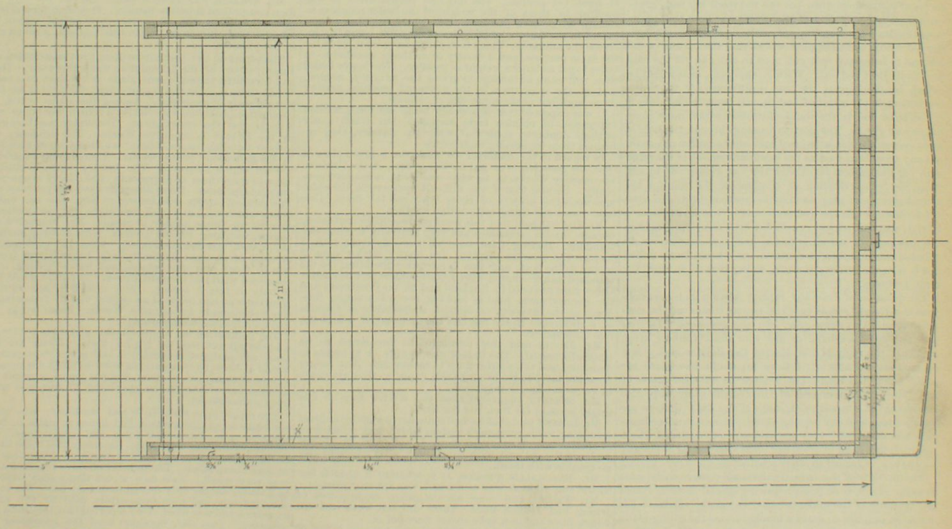
Half Floor Frame.

Although this is called a 33-foot car, its length, exclusive of platform timbers, is 34 feet, and over all 36 ft. 6½ in. The platforms are 15 in. wide, and are considered a very important feature of the construction. The floor frame has eight longitudinal sills and is unusually strong. The side sills *A A* are 5 × 8, the intermediates 3 × 8, and the centre sills 3½ × 9 inches, all of the best quality of Georgia yellow pine. The end sills, bolsters, needle-beams, etc., are of oak. The side frame consists of posts and braces 6 in. wide by 2¼ in. thick. The braces are set in pockets and are of different lengths, cut to gauge so as to keep up the camber of the car. The lining is carried up 4 ft. from the floor, so that 40,000 pounds of grain can be carried without loss, even should the sheathing be damaged. The sheathing has a tight top H_2, cut in between the post and braces and made to fit. The belt-rail is not at the top of the sheathing, but at the middle of the car, where it belongs. The trussing of the car is done by two rods B_2, next the outside intermediate sills. These rods are made in two pieces, coupled at the center by a fork and pin, and pass over a pair of saddle castings on the bolster to the end of the car. The center sills are held to the end sills by two long bolts or rods B_4, the ends of which are turned into the timber, making with the bolts a very secure connection. The body truss-rods are carried down very low, and at the center are 16 inches below the timbers. The trussing of the body-bolsters is very good, and gives

BALTIMORE & OHIO RAILROAD—CAPACITY 40,000 POUNDS.



Half Side Elevation.



Floor, and Side and End Sections.

great support to the wood. Each truss is made in three pieces. B, B_2, B_3. The two rods B_3 are of round iron and perfectly straight. The strap B sits upon two castings at the sides of the center sills, inside of which the rods B_4 pass. The parts are connected by a fork and pin. A deep truss is thus obtained which can be easily taken out if necessary, and can be very quickly put in without the necessity of driving and springing the rods.

The roof is of pine, and although covered with tin, there are no nails or bolt-holes. Each sheet is put on with cleats through which the nails are driven. The running-board is held in place by galvanized iron cleats soldered to the tin. These are turned upward and the nails are driven through them into the sides of the cleats or bars of the running-board. The road has found it far better to make a tight and durable roof, even if the first cost is greater, than to depend upon the ordinary painted pine roof, which gave infinite trouble, and which was not safe against leakage. The roof of a 34-foot car requires 191 sheets of 14×20 tin. The ends of the car are covered with diagonal boarding, tongued and grooved and blind-nailed. Put on in this way, the need for bracing the bracing is not felt; the boarding does the work in a very effective manner. The roof is supported by sawed carlines cut to the proper curve. The "circular rafters," as they are called, are of oak, 2½ inches square. On each side of the door is a straight carline K, with a straight bottom 2½ inches thick and 7 inches deep in the center. Two similar carlines are put into the roof half way from the door to the end of the car. These stiffen the roof. At their sides the cross-tie rods are put in.

The draw-gear of the cars of this road is worthy of special mention, as it illustrates the best method of putting in draw-bars, draw-bar springs, and taking the strain of the draft. As is generally known, the road has for some twenty years used a continuous draw-bar, and used it with success, but it is not so generally known how it has been made to work so as to avoid the troubles which have been so often met with elsewhere with the continuous draft. The first point to be noticed is that the draw timbers are solid from the back of the draw-spring to the bolster, a distance of 25½ inches. Through this timber a 3-inch square hole permits the draw-bar rod to pass. This rod is 2 inches in diameter. The position of these packing pieces is shown at *D D*. On their faces an iron washer 1 inch thick and about 7 inches square is placed, and forms the seat for the draw-spring. How firmly this supports the draw-bar and spring can be seen by referring to the sectional elevation, where the whole space, with the exception of that taken up by the draw-rod, is solid oak all the way to the bolster. The packing pieces are 7 inches wide by 7 deep. The draw timbers themselves are secured to the sills by 10 bolts, 5 in each, while there are 4 horizontal bolts going through the straps *H H* and binding the whole mass of timber into a solid block. The draw-bar is a simple block of cast-iron with a hole through it for the draw-rod, a mouth for the link and another hole for the pin. It requires no finishing and is ready for use as soon as the sand is brushed off and the fins removed. When the springs close up there is nothing to break, no castings to tear loose or be knocked off. Under such circumstances the shock is at once transferred to the car frame by solid wood and iron, in direct lines. The drawing arrangement consists of a pair of rods *F F*, 2 in. in diameter and 17 ft. 6 in. long, coupled in the center by an 18-inch swivel F_2. These rods are loose in their connection, both in the swivels and practically in the draw-bars, though this is an unimportant matter. The point at which the perfect longitudinal freedom ends is in the center of the car. Here, when the springs are compressed too much, or broken, the bar is free to slide without crippling in the middle, which is the dangerous point. The swivel consists of two oval cast-iron heads, F_2, connected by a pair of round inch rods. Through holes in these heads the draw-rods pass and are prevented from pulling out by keys F_3. These keys are 3 inches wide by ½ inch thick. They are of steel, and are prevented from working out by split rings put through the bottom. With many forms of continuous draw-bar the rod itself has been made solid from end to end, and the result has been that every time the draw timbers dropped or the dead woods crushed, the rod would be so crippled or bent that the bottom of the car had to be pretty well cut open in order to get the long and badly bent rod out. With a slip-joint, as it might be called, in the center, the case is different. If the draw-bar is completely smashed and the rod bent, the bending is at the outer end, in the smashed timbers which must come off in any event. The portion passing through the bolster and cross-timbers is uninjured and can be pulled out without any trouble as soon as the key is driven out of the other end. If the timbers break and the car comes sill to sill, there can be no crippling or bending of the rod, for the swivel gives just play enough to prevent this. In case the keys shear off, the rod pulls out. This, however, is a trivial accident which causes but little more trouble than the breakage of a link. Spare keys are carried on all caboose cars and freight engines, and when a bar is pulled out it is immediately put back, a key driven in and the train proceeds.

The question of draw-bar repairs (always a tender subject in a freight repair yard) of course comes up in connection with the draw-gear. To the question, "Do you ever pull out draw-bars, or are your draw timbers often broken?" the reply of the Master Car-Builder was, "Not often, that I know of; I have no doubt but there are some along the road; but I have never seen much of it." The foreman of one of the freight shops who also has charge of a repair yard, said: "The draw timbers are very seldom broken; may be three per month; the draw-bars seldom break." No one seemed to understand why a question in regard to draw-bar breakages should be put any more than in regard to other repairs.

The truck is of the ordinary diamond pattern with inside brakes. There is no point requiring special notice except the hanging of the brake beams. On many roads it has been the practice to carry a bracket across the spring-plank for the purpose. Mr. Cromwell, the M. of M., however, found that this was much in the way of the elliptic springs which he wished to use upon his cars, and set about devising some method by which he could carry the brake from the pedestal or pillar. This he succeeded in doing by the use of new pillar castings, a pair of which, right and left, and ready for the bolster, are shown in cut. The jaw *A* carries the link by which the brake is hung. It projects outward from the line of the bolster far enough to clear the wood. This jaw is formed into a bracket which is made a part of the pillar itself.

THE New York, Susquehanna & Western is adding 300 twenty-ton coal hopper cars to its equipment.

(*Concluded from page 97.*)

coupling along a vertical plane, so that after it is generally introduced there will be no longer any use for a link."

Mr. CLOUD thought that all would agree that it would be a good thing ultimately to abandon the link. But in the process of transition from the present to the proposed practice, the coupler used, whatever it may be, must couple with the old devices. He thought the eyes of the whole country were looking for something to be done by the convention, and if it could not agree upon one mechanical principle, at least, that was indispensable in a car coupler, he would go home thoroughly ashamed of himself as one of its members. The people were looking upon this as a test question that would decide the success of the organization. If nothing was done this year, the members would become objects of derision.

Mr. WALL accepted the amendment offered by Mr. Cloud, and the motion as amended was unanimously carried.

Mr. ADAMS said that arrangements were in progress for the adoption of a certain coupler by certain lines of road running about 100,000 cars. These arrangements would be completed within two weeks perhaps. He would like to ask what influence such a movement would have upon the other railroads of the country in reference to the coming coupler.

Mr. WALL: I submit that we want to influence these gentlemen who are going to put the coupling referred to on 100,000 cars. It is for this reason that we have laid down the mechanical principle just adopted by the convention. The remarks of Mr. Adams are in a certain sense a threat—an attempt on the part of the tail to waggle the dog.

Mr. CLOUD moved the substitution of the following resolution for the whole matter:

"*Resolved*, That this Convention recommend to any railroads who wish to experiment with couplers not belonging to the most mechanically perfect class, as Janney or Cowell, to experiment with the following: Archer, Wilson & Walker, Ames, Conway-Ball, United States, Gifford, Mitchell."

Mr. BLACKALL seconded the resolution, which was carried unanimously.

After some further discussion,

Mr. SOULE moved the adoption of the following:

"*Resolved*, That the Executive Committee issue a circular to all the railroad companies represented in this Association, setting forth our plan of retaining Mr. F. N. Forney to devise, conduct and record tests of automatic freight car couplers, and asking them to signify their willingness to sustain their pro rata portion of all expenses incident to such tests."

This motion was carried unanimously, and the discussion closed.

Master Mechanics' Association.

The following summary of the proceedings of the recent annual convention, held at Long Branch, is a continuation of the report in our last issue:

Mr. LAUDER said that steam from locomotive boilers is usually so wet that no trouble is to be apprehended on account of poor or difficult lubrication at the higher temperatures. He thought that an increased pressure was absolutely essential, and that in future it would be best to carry at least 175 pounds. The day had passed when it was needful to think of the weight of the boiler requisite to sustain so great a pressure. Blocks of iron have been placed in the frames by the sides of the fire boxes to increase the adhesion. Thick foot-plates have been made for the same purpose, and a variety of methods resorted to in order to get as large a weight as possible. The heavy boiler then will be an advantage in giving the adhesion needed, and at the same time, by the increased pressure, getting more work out of the same size of cylinder.

It was expected that this would bring out some decided expression of opinion from members, but while many of them doubtless coincided with Mr. Lauder, they refrained from expressing their views.

In regard to the diameter of flues for a given class of coal, the question was put to Mr. Austin, of the Baldwin Locomotive Works, as to what was being demanded generally. He said that it was difficult to reconcile the opinions upon this subject of those who call for flues. One man wants one thing and another another.

Mr. LAUDER said that this need produce little confusion, because master mechanics had very generally come to one standard. Having tried sizes all the way from 1½ to 3 inches, the general practice has finally settled upon 2 inches as the best, and this is probably the fittest for the standard gauge engine with a flue about 11 feet in length. Other sizes are used in England and on the Continent, and the Pennsylvania road is looking toward a larger flue. Much of the diversity of opinion is doubtless on account of a difference in the flue and the material of which the flue is composed.

Mr. AUSTIN said that he made the flue larger as its length increased. The 12-foot flue was 2¼ or 2½ inches in diameter, and the shorter flues 1½ inches, etc. The longer flues are more liable to shake the flame, so they are much larger as the length increased.

Mr. SPRAGUE suggested that the shorter English flue might account for their smaller size.

Mr. JOHANN said that he had some narrow-gauge engines belonging to his company's system which had 8-foot flues of small size. They never worked well, and he at last replaced the old ones with 2-inch flues, after which he had no trouble with them.

Mr. BLACKALL'S question as to whether a 2½-inch flue would stay tight as well as a 2-inch was not answered.

Mr. WILDER had some narrow-gauge engines, two of which had 1½-inch flues. These did not work well till 2-inch flues and new tube sheets were put in.

Mr. JOHANN said it was the fuel and not the gauge of the engine that controls the size of the flue; and Mr. Sprague added that his works were using three sizes of flues, 1½, 1¾ and 2 inch.

Mr. BLACKWELL said that 10-wheel engines on his road, with 2-inch flues 12 feet 6 inches long, were good, satisfactory steamers.

When this subject came up, Mr. Wells corrected a quotation which had been made from him. He had not said they should be as small as possible, but as small as possible in order to burn the necessary amount of fuel. The question whether the wagon top boiler justified its increased cost in actual work provoked no discussion, but brought out some statements in regard to the sizes of fire boxes. Mr. Wilder said he only used an anthracite box. Some of these were 9 feet 6 inches long; in the consolidation engines they were 120 inches long. The long fire box gives the best results and is better for evaporation. It gives from 140 to 150 feet of heating surface in the fire box, against 99 in the other style. Mr. Blackwell added that 102 inches long are working satisfactorily on the Norfolk & Western road. Nothing was said in regard to the proper point for the delivery of feed water.

Fire brick arches were next taken up. The gist of Mr. Wilder's remarks seemed to be that the greater care necessary in firing the engines with the arches was the cause of their success. After a man had learned how to use them he appeared to get quite as good results from engines without them. He used from 3 to 5 two-inch holes under the bricks.

Mr. SETCHEL, in speaking of the merits of the arches compared with bricks upon tubes, said he did not think the tubes were practicable with hard or impure water. They are wrong in principle in such cases, as they take the dirty water from the water-leg, and distribute it over the crown sheet where the purest water is wanted. The arch is better and costs less money.

Mr. HASKELL said he found the crown sheet cleaner when he had used the tubes. This was contrary to what he had supposed would be the case.

Mr. FLYNN found the arches would last from 3 to 4 months, and after some experimenting, he failed to find any economy in their use. Men can be educated to fire well without them.

Mr. HASKELL had found the arch useful in preventing leaky flues, and mentioned the case of an engine which had given much trouble in this way. He finally put in the brick arch, and for nine months it had run without a leak.

The subject of the length of flues caused no discussion; and Mr. Lauder again brought up the important matter of Boiler Testing; no one had anything to say, and the subject was closed.

The next question was, Should we not protect our locomotive fire-boxes so as to get an air space?

Mr. EASTMAN spoke of the 100 square feet of exposed surface in these boxes, of their importance in generating steam, and the fact that these surfaces were the hottest portions of the boiler. He thought a ¼-inch air space might be obtained, which would be of great advantage.

In reply to the question of where we shall place the injector lubricator, Mr. Setchel said if it was put on the water-pipe it would seem that the oil will go out at the overflow.

Mr. SINCLAIR had found that in a Seller's injector which had ceased to work a thin film of scale had formed so as to stop the action of the piston. He had an oil feed put upon the steam-pipe and supplied it with black oil, which was found by experiment better than cylinder or sperm oil. The remedy was perfect.

Mr. FULLER had some hundreds of injectors in use with self-feeding oil cups on the steam pipes. They worked satisfactorily and there is no trouble from scale.

In reply to the question, What is the best piston packing, Mr. Devine said he had gone back to phosphor-bronze rings.

Mr. SETCHEL said this was an old topic on which we formerly had a committee. A diversity of practice exists. Some are running coiled springs, some use a wedge, and some a special metal ring. He had thought that a T-head with a ring sprung over it was the only form he could afford to use.

Mr. SPRAGUE was using a ring. He cut the ring and then compressed it before turning. It is then turned true. When finished it will, of course, open out of round, but when in place it is true, and in this way gets a round ring in the cylinder.

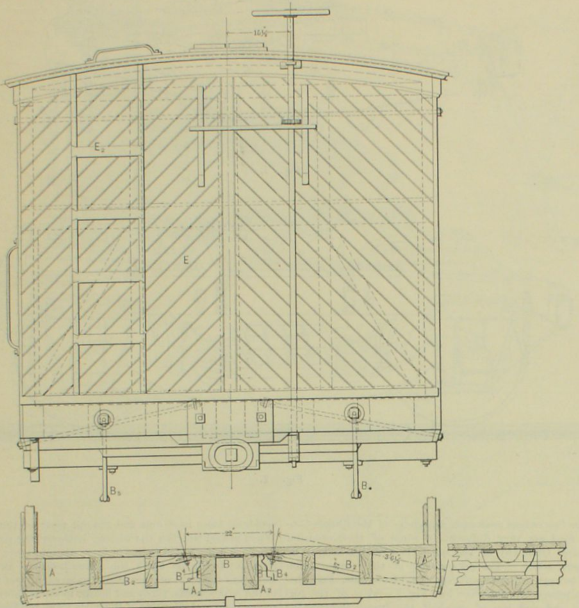
The report of the committee upon the Construction and Improvement of the Locomotive was a short one. There had been little improvement made in the last two years. While there is room for improvement, the field is one that is constantly diminishing. Among the plans which the committee presented was one for a return flue boiler with a stack over the crown sheet. The design was furnished by the Brooks Locomotive Works. The tendency was toward building larger boilers, which are made necessary by the increase in piston speeds. There is also a tendency toward higher pressures. The heating surface must be large to meet these requirements, and a large evaporative duty is imperative. These demands have not yet been met. The greatest credit will belong to him who can build a boiler which will, under all conditions and circumstances, furnish an ample supply of steam. Mr. Mitchell's new engine, weighing 108,000 pounds, with 88,000 pounds on the drivers, was described briefly. It has but 11,000 pounds on each of its eight driving-wheels, has two pony trucks, one in front and one behind, and has a leading truck equalized with the forward driver. The rigid wheel base is only 8 feet 3 inches. The cylinders are 20 × 26. Mention was also made of an engine design presented by the Schenectady Locomotive Works. These works also had an improved tender truck.

The committee on Smoke-Stacks and Spark-Arresters said the subject was too big for them. There are now some 300 patterns in existence, and a week's experience would at least be necessary in order to reach a conclusion in regard to any one of them, and the report suggests that a committee of experts be appointed to test and report upon smoke-stacks.

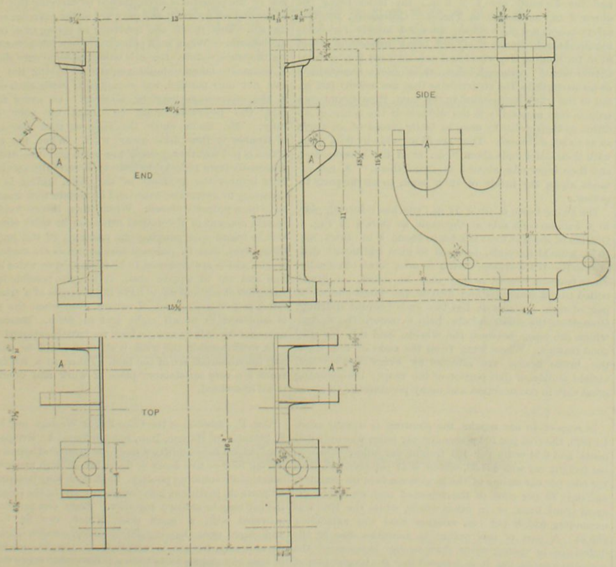
The report upon Shop Tools and Machinery was not so elaborate as the committee had hoped to make it, but it contains some interesting facts and suggestions. The amount of milling work done, the committee think should be increased, since the milling machine saves time and utilizes cheap labor. The number of these reported in use was very small. Two men report that a slide lathe and bolt cutter are the only special tools they use. The turret-head machine had been successfully used by two of the members, and was liked. Two reported that they did a little grinding. One (Mr. Sprague) used the grindstone and emery-wheel very extensively in his work, in some cases employing a wheel as small as 1½ inches. For finishing he found walrus-hide wheels very useful. Tube-welding machines are largely used, and the best results are reported. In one case two men welded 75 tubes in one day, and even better work than this had been spoken of. Upon the subject of dies and formers, some information was obtained. One member had found great advantages from the use of spring dies, etc., for the steam hammer, with stock cut accurately to length and a careful arrangement of the work.

The committee recommend the use of a stud machine whenever work enough could be found in a shop to keep a lathe busy, and think all bolts should be cut or finished in dies, and that milling machines be used in all cases where this can be done. The committee are decidedly of opinion that the day of special tools has come to stay, and

STANDARD 33-FOOT HOUSE CAR—BALTIMORE & OHIO RAILROAD.



End View, and Section Showing Bolster Truss With New Casting.



Right and Left Bolster Guide-Bars, Freight Car Truck—Baltimore & Ohio Railroad.

that this fact should be recognized by the master mechanics of the country.

The report of the Committee on Materials for Truck and Tender Wheels showed, from replies to circulars sent out, that great diversity of opinion existed on the subject, but the larger number favored a steel tire instead of a cast-iron one.

Mr. **Setchel** thought no steel-tired wheel was as safe as a cast-iron wheel unless the tire is bolted fast. He mentioned the danger from sharp flanges, and instanced a case where a large establishment had hard work to keep up with the sharp flanges from their road and prevent them from accumulating.

Mr. **Lauder** counted himself in favor of the steel wheel, though he had no figures to present. On his road the steel wheel was the best, and he gave his preference to the Allston wheel made by Washburn. This is a cast wheel with a cast-steel tire. He was careful to put in exact mates in sizes. He turned them up with a square-nosed tool, finishing from three to four pair per day in a special lathe. Had not used them long enough to be able to state their actual life. He had taken off an inch from some of them, and found good, clear, bright, solid and homogeneous metal.

Mr. **Flynn**'s experience was against the Allston wheel. He had had them under five engines and tenders, and had to turn them to get down the sharp flanges. He said they had the important advantage over the cast-iron wheel of a smooth tread. In general he thought steel wheels 100 per cent. more costly than cast-iron wheels. The paper wheel costs, say, six times as much as the iron. The actual cost of the cast-iron wheel, minus the old wheel, is from $6 to $7, while the paper wheel is about $70. The Allston wheel is much cheaper. Finally, he thought nothing in the market was as cheap as the chilled cast-iron wheel. In reply to a question he said he could not remember a breakage of an engine truck wheel on his road.

Mr. **Eastman** had many kinds of steel-tired wheels on his road, but coincided with the opinion of Mr. Lauder. He had one pair of Paige wheels on a locomotive that have made 150,000 miles without being turned. They have no sharp flanges after running 14 months, and are not $\frac{1}{32}$d small. But there are sharp flanges when a large and small wheel are put upon the same axle. He has 32 Paige wheels, but has had no sharp flanges among them yet. His drawing-room cars are on paper wheels, and have run three years without getting sharp flanges. This was the more remarkable, as they had run from Montreal to Portland, which is one of the crookedest lines of the country. Sharp flanges, he thought, could always be traced to the hardness of the steel or differences in diameters.

Mr. **Lauder** said that a crooked road was a hard place for a steel-tired engine truck wheel. On such a road he had been forced to use chilled wheels in his engine trucks instead of steel. For tenders and cars he had found nothing equal to the steel wheels. Under any circumstances, the front end of an engine is a hard place for a steel wheel.

Mr. **Flynn** used passenger wheels under both cars, engine trucks and tenders, and sized them very carefully when putting them on. When the front wheels of an engine truck begins to wear sharp the truck is turned around so as to make the other wheels do the work. On a straight road he thought steel wheels were more economical than cast-iron.

In reply to several questions from members, Mr. Lauder described the Washburn wheel and its manufacture. At one end of the foundry there is a steel furnace, at the other a cupola. The tire is first poured, and when it has cooled enough to set is lifted out, swung into the iron mold, and the iron centre poured. He had found these tires as solid as rolled steel.

A member said he was once a chilled-wheel man, but had changed his ideas. While it may cost more to run paper wheels than cast-iron ones, he thought there was very little difference. He turns the tires with a large fillet, and they run from 80,000 to 100,000 miles for each turning.

Upon the subject of balanced valves, there was a long and animated discussion. The general opinion seemed to be in favor of their adoption.

Mr. **Barnett** said he had Richardson valves which had run for 24 months without being touched. The steam chest was not opened during all this time. To make them work perfectly, the grooves should be milled out, and the packing strips made deep, so as to prevent side wear in the strips or a tendency to turn over.

Mr. **Morel** had four years' experience with balanced valves. He mentioned a case where 166,000 miles had been made with a Morse valve on a heavy passenger engine. He illustrated how he put in the packing and cut off the corners so as to make a cheaper and tighter job. The plan consisted of running a groove across the corner at the point where the packing strips meet.

Mr. **Woodcock** had several engines with balanced valves in them, and said that the engine which would take the excursionists to Beach Haven was fitted with such a valve.

Mr. **Barnett** remarked that relief valves were necessary on the steam chests of engines fitted with balanced valves. Here followed some discussion in regard to the necessity for using a relief valve with a Richardson, and not with a common D valve.

Mr. **Eastman** explained that when an engine is shut off, and still runs forward, the cylinders are converted into pumps, which form a vacuum in the steam chest. With the ordinary D valve, the atmospheric pressure in the exhaust cavity lifts it from its seat, and relieving the vacuum. The balanced valve cannot lift, and the cylinders continue their pumping action unless a relief valve is placed in the steam chest. Mr. Eastman had some Richardson valves, some of which had been in service for two years. They have been faced off. He had seen steam chests opened that had run 126,000 miles, that were in fine condition. From what he had seen, he thought there was virtue in a balanced valve. They make an engine easier to handle and do not tire out the men. Favoring the engineer is an advantage, as he can do more work in a more satisfactory way.

Mr. **Twombly** used the Morse valve. It came to him from Portland. The patent had expired.

In reply to the question as to what kind of a spring should be used, whether spiral or flat, there were many answers. Mr. Morel used a No. 22 flat steel spring, and Mr. Woodcock a similar half-elliptic spring.

Mr. **Blackwell** said the difficulty in using a spiral spring arose from the fact that the pockets would fill with tallow, and the spring would shortly cease to act. Others concurred in this.

Mr. **Barnett** spoke of the jointing of the packing of the Richardson valve as one of the points needing attention, and drew a sketch of the ordinary method, and also of the improved form which he used himself. One packing strip runs all the way through, while the end pieces stop and are mitred into the other strips a short distance from the ends. The mitre stops short and does not pass all the way through the long strip. He had found the flat spring was too strong and made the packing cut, and had adopted a coil in consequence.

The report on Lubricating Valves was taken up. It presented the views of many different individuals which were widely diverse. One road was mentioned where tallow had been used for 28 years on one engine. Examination showed no signs of corrosion in any portion of steam chest or cylinder. This was attributed to the pure tallow which can be had at the South. The question as to the best oil to be used seemed to be one which the committee did not feel competent to decide. In using oil, the hand-feed was generally condemned as very bad, and has generally been abandoned. Pipes from the cab are better, and there are a few roads that think that this is the best way of all. They have not, however, tried anything better. This method requires great attention from the engine-man, and is also wasteful and uncertain. The difference in the conditions prevailing at the North and in the South will in many instances account for the great diversity of opinion which has been expressed.

The automatic sight feed cups are without doubt the best, and the chairman of the committee gave figures to the effect that they are 80 per cent. better than pipes on passenger engines, and 47 per cent. on freight engines.

Mr. LAUDER said he thought he put in the first Siebert oil cup that was ever placed on a locomotive engine. It is still running and is doing well. It fed into the dry pipe, but he thought it should feed into a pipe under the jacket. He had some 17 × 24 engines which are running 100 miles to a pint of oil. He said that Mr. Cloud had showed him an apparatus with two cups that makes 260 miles (the round trip from Altoona to Harrisburg) upon one quart of oil. These cups should give 150 miles per pint of oil.

Mr. MITCHELL had put on a cup that feeds both sides equally. It feeds into an oil pipe and has run 520 miles per quart of oil.

Mr. SETCHEL had 12 sight feed cups. He related an incident which showed how the men felt toward the cups. One was put upon an engine on trial, and after a time some alteration became necessary, and the agent went down to the round-house to take the cup apart. The engineer misunderstood what was being done, and supposing the trial was over and the cup was to be returned, offered to pay for it himself in order to keep it on his engine. He (Mr. Setchel) had thought the cups might be bad in a switching engine in a city, where it is out of the question to open the cylinder cocks because of the leakage of steam into the cylinders from the lubricators, but could not speak in regard to this point from experience. In regard to cheap or good oil, he asked some questions. Was it not best to use tallow for lubrication, and then add a quantity of some cheap oil to bring up the bulk to that which the men were in the habit of using? He had been trying this experiment, and used one barrel of tallow and two barrels of cheap West Virginia oil to make up the bulk, and so far the result had been satisfactory.

The reading of the report on the Coning of Wheels was dispensed with, as it was largely composed of answers to questions asked.

A paper by Mr. F. W. Dean, on Connecting Rods, was read, which we shall print in our next issue.

Mr. LAUDER moved that the Association adopt the Seller's Limit Gauges for sizes of bar iron, which was agreed to.

Mr. LAUDER then remarked upon the subject of rotation in the office of President of the Association, and thought that two years' term of service was long enough. He then read a letter from the President, Mr. Reuben Wells, which thoroughly coincided with the views of Mr. Lauder, and presenting in forcible terms the reasons for the frequent infusion of new blood into the presidency of the Association.

The following officers were then chosen for the ensuing year: President, J. H. Flynn, Western & Atlantic; First Vice-President, J. D. Barnett, Midland, of Canada; Second Vice-President, Wm. Woodcock, Central Division, Philadelphia & Reading; Secretary, J. H. Setchel, Ohio & Mississippi; Treasurer, George Richards, Boston & Providence.

Mr. H. M. Britton and Mr. Charles R. Peddle were elected honorary members.

Cost of Engine and Car Repairs on the "Erie."

The repairs of engines on the New York, Lake Erie & Western road in 1883 cost 4.33 cents per mile, after deducting the cost of narrow-gauging. This was .22 of a cent per mile less than the cost in 1882. The cost of fuel consumption in 1883 was 8.84 cents per mile, and the stores, .66 of a cent. The total cost of running was 13.85 cents per mile, exclusive of 7.07 cents for wages of engineers and firemen. All mileage is on time-card basis. Way freight is allowed only 5 miles for switching. Other freight trains are not allowed anything, nor is any allowance made for running from round-houses. These allowances are much smaller than on many other roads, and cut down the mileage very considerably. The estimated cost of repairs is low, and if the engine mileage was calculated on as liberal a basis as it is on some roads, the cost would be still lower. This is largely due to the system adopted and maintained by Mr. Wilder, the Superintendent of Motive Power and Machinery. A full set of links, for example, fitted up for a consolidated engine, including saddles, bushes, blocks and pins, cost in 1883 only $29.58. Since then some improvements have been made in methods and machinery, and it is probable that the same work can be done this year for $25. Every part is made interchangeable as far as possible, and this is done to a greater extent in consequence of the adoption of a few standard types of engines. Since the gauge of the road was narrowed, all new engines have been built in conformity with these standards, and the old ones as fast as they are worn out are either cut up or reconstructed to standard.

In respect to car repairs, the showing is equally good. In 1883, the cost per 100 passenger car miles was only 6.87 cents, and 6.74 cents per 100 freight car miles. The cost per freight car was $25.30, which is 41 per cent. less than the cost per car on one of the largest roads in the country, and only 38 per cent. of the reported cost on one of the great trunk lines; or, in other words, while the Erie was expending $25.30 per car, another road was expending $66.85. A part of this saving is doubtless due to the difference in management, part to the location of the respective roads, but it is believed that the largest part of it may be traced to the construction of the drawing and buffing gear. If so, it is a matter that is worth looking into.

FOUR-WHEELED PASSENGER CAR TRUCK—ILLINOIS CENTRAL RAILROAD.

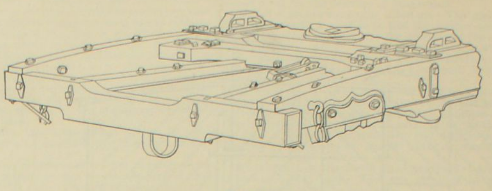


Fig. 1.

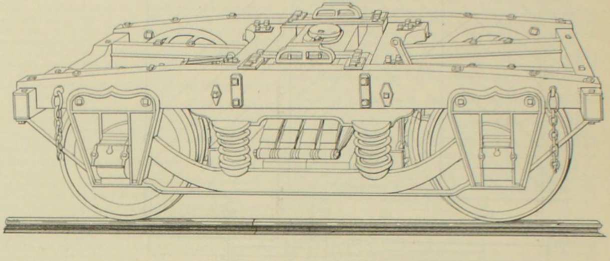


Fig. 2.

The four-wheel passenger car trucks of the Illinois Central road are very different in some of their essential features from any of the same class of trucks built by Eastern roads. The peculiarities of their construction will be apparent from an inspection of the cuts, Fig. 1 being a perspective side view and Fig. 2 a view of the forward end and top of one-half the frame, showing the safety-beams.

This truck was designed by Mr. W. B. Snow, the Master Car-Builder of the road, and the construction is such as to secure the greatest amount of strength, stiffness and rigidity in the frame under conditions of severe service. The length of the frame is 10 ft. 8 in., the width 6 ft. 6 in. and the wheel-base 7 ft. The rear end-piece is 4 × 8 in., and the forward one 4 × 6 in., the latter being cut down 2 in., as shown in Fig. 2. Ordinarily, the two safety-beams are plain sticks, intended merely for holding up the axle in case it should break inside the wheel fit or for holding the wheel and axle in place if a journal should break. Although heavy, these sticks impart little or no strength to the structure as they are usually put in, but in the truck represented in the cuts, these beams contribute very materially to the stiffness of the frame in addition to their ordinary uses, by being placed at an angle so as to act as braces. They are 2½ in. wide by 8 in. deep, with their outer ends about 10 in. from the wheel-pieces, and their inner ones about 2 ft. from them. A rod extends along the inside of each beam to tie the parts together.

The swing-beam is 10 × 14 in., and has a furring piece 10 × 2 in. on each side at the ends, as shown in Fig. 1. Outside of the transoms is a brace about 3 in. thick, and 10 in. wide at the ends, designed to give additional stiffness to the truck-frame, which it does most effectually. These transom braces, as they may be called, are firmly bolted to the transoms and also to the wheel-pieces. A pair of strap washers on the two ends prevent splitting, strengthen the stick, and also help to secure the brakes, which are hung between the wheels, and this for very good reasons. When hung from the ends of the truck the brake beams are affected by every sudden and violent motion of that portion of the truck, necessitating great care in construction and many precautions to avoid accidents from loose nuts and general wear of the parts. When placed between the wheels, however, the points of suspension are near the line of least motion, there is less tendency to tilt the truck, the connections are all shortened, and the ends of the frame relieved of the weight of the brake-beams, shoes and heads, to say nothing of the momentum and vibration of the parts when the brakes are hung at the ends.

The truck has quadruple, three-leaved elliptic springs 36 in. long, and nest-spirals on the equalizers. The equalizers are 4½×1¾ in., the spring plank is 3 in. thick and 20 in. long. This arrangement of springs makes very easy riding. The jaw brace is dropped a little to clear the equalizer, and is slightly thickened at the ends. The outer jaw of the pedestal is strengthened by carrying the brace to the end sill upward, and outward to the extreme end of the sill. This resists the tendency to spring in or out at the bottom. When such pains have been taken for keeping the truck square after it is built, the same care should, of course, be taken to build it square by having the journals not only parallel, but rectangular with each other, if the expression may be allowed. In order to do this, the pedestals must be lined up very carefully. Mr. Snow chills the jaws so that one cause of trouble is thus done away with. When the truck frame is put together, gauges are used, and the distance diagonally from pedestal to pedestal is carefully measured. This insures the accuracy of the jaws, and it is only necessary to gauge the boxes and be certain that the cores have been properly placed. While these things receive a certain amount of theoretical attention in most shops, it will be found upon gauging the positions of the journals themselves, that in practice serious errors are made, and trucks which are supposed to be perfect have axles out of line and out of square also. It is quite possible by the variation of cores alone to have the journals of a truck as much as ¼ of an inch out of square, even when the truck is supposed to be all right and in tram. Hence the necessity for this gauging which we have mentioned.

In workmanship the truck is all that could be desired, and the materials are of the best. Taken as a whole, the truck is a very satisfactory piece of work and creditable to all concerned.

WM. P. JENKINS, of the Lake Erie & Western, and James L. Streetor, of Muncie, Ind., have invented a "live-poultry car," which is not unlike a stock car in general appearance having four or five decks or floors far enough apart to accommodate standing poultry. Each deck may be separated by portable partitions into compartments, or the length of the car may be thrown together. Each compartment is provided with a main door, which can be locked, and each door has a sliding door, which locks independently, for use in transfer. A simple contrivance of rods and staples locks with a lever crank every door at once, and a storm curtain protects the fowls in bad weather. A feed and water trough holds food and water for a trip to the seaboard.

THE JONES ROCKING GRATE BAR FOR STATIONARY AND LOCOMOTIVE ENGINES.

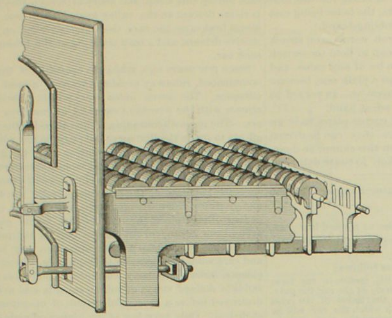


Fig. 1.

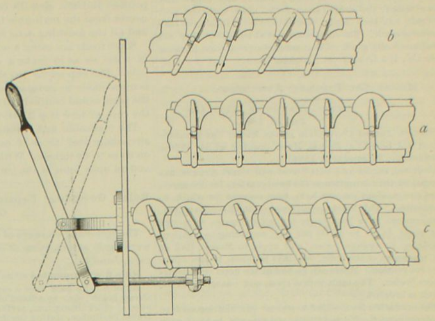


Fig. 2.

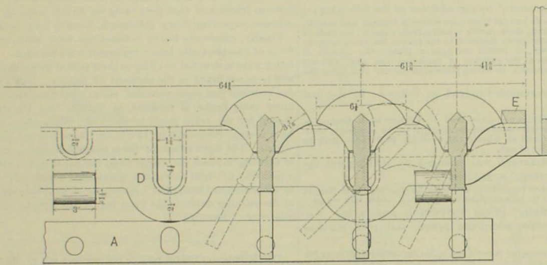


Fig. 3.

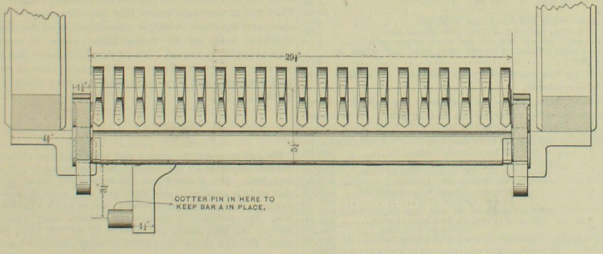


Fig. 4.

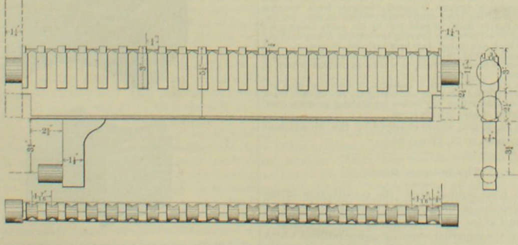


Fig. 5.

The cuts illustrate this self-cleaning device as applied to stationary and locomotive boilers. In its construction it differs in several very important points from the numerous other devices of its class. In designing it, no attempt was made to construct a mill for grinding clinkers fine enough to pass through the grate bars; but instead of this, movable bars were arranged, so as to be separated sufficiently to allow clinkers, ashes and dirt to fall through into the ash-pan. Grinding the clinkers might be practicable, perhaps, but they are not formed where they are within reach of the teeth of the bars, and the motions of the teeth merely lift or stir the fires a little without getting at the large accumulations which obstruct the draft, and prevent perfect combustion. Although the soft coals of this country behave very differently during combustion, and are not at all like anthracite, yet there seems to be one form of treatment applicable to all of them. When ordinary fire tools are used anthracite must be let alone, bituminous must have attention; one may be fired at considerable intervals, the other frequently; one produces no gas to speak of, while the other is a decided gas producer, and must be managed accordingly.

To burn anthracite successfully, it is necessary that the whole bottom of the fire be literally cut off and dropped into the ash-pan when the carbon has been consumed. This plan has been successfully applied on a small scale in domestic fires. With a grate arranged to clean in this way, a fire can be made to burn for months without shaking, and with no necessity for using the slice or poker. With any other plan the use of the poker is essential, and the fire must be raked to remove the clinkers. Different as the soft coals are from anthracite, a moment's consideration shows the same treatment would be equally effective with them.

Fig. 1 shows the construction of the grate. The bars are hinged at the ends, but the pivots are not in line, the alternative bars having them two inches lower down than the others. Upon the main bars are fingers or saddles which are the grate bars proper. These are cast separately and driven down upon the main bars. The distance between them is made to suit the fuel that is used.

Fig. 2 (*a*) shows the normal position of the bars and fingers. The points of the fingers are separated by a distance equal to the space between them. Below the main bars arms project and are coupled by pins to a connecting rod going the whole length of the furnace. Slotted holes provide for the difference in motion caused by the unequal length of the arms; (*b*) shows how the grate is made to open in one direction and allow the ash cinders and clinkers to drop; (*c*) shows the bars moved in the opposite direction. There is a slight rolling motion of the saddles, or fingers, against the coal, and the ends of one set lap across those of the next sufficiently to prevent the clinkers from burning upon them. The rounded form gives a considerable increase of grate opening over the plain straight bar. Of course, the lever is never used so as to get the full extent of the opening unless the fire is very dirty. The shaking, which is easy, takes the place of all the usual laborious work with the fire tools, and a fire can be run continuously without other cleaning than that which the grate bar effects.

The Chicago & Rock Island road has adopted the bar, and the engines of the road are nearly all fitted with it. Its performance is very satisfactory, especially with express engines making long runs with heavy trains. The coal used is the Illinois product, and is apparently the run of the mine. The grades between Chicago and Joliet are quite heavy to within a few miles of the latter place. During an average trip out the grate will be shaken two or three times, the practice varying according to the experience and skill of firemen in handling the fires. On reaching Joliet the fire is bright and clear and in good condition. Here an incoming train is met, the engine of which has run 188 miles with an express train, and has used two tenders full of coal, or say 9 tons. The fire in this engine at this point is as bright as could be desired, and, as a rule, the engine will steam freely to the top of the grade coming toward Chicago. This portion of the road has a number of rather sharp curves. From the top of the grade the work is easier, though a large number of steps make it difficult to come up to the schedule time.

On this 40-mile run, which finishes the 288 miles which the engines run each day, the grate may be shaken lightly once or twice. On reaching the Chicago depot the fire is in good condition, although at this point about 11 tons of coal have been used. On the following train, which arrives half or three-quarters of an hour later, about the same conditions prevail. Mr. Twombly, the Master Mechanic of the road, considers these runs as fair examples of the work which the grate is doing. There is no hard, hot, exhausting work by the firemen. As soon as the grates have been shaken, the ash-pan, which is of the dumping pattern, is dropped, and the ashes are allowed to fall upon the track.

Figs. 3, 4 and 5 show the designs made by Mr. Twombly for putting the grates into his standard engines. On each side three bearers are bolted up to the mud-ring to carry the bearing piece *D*. The connecting rod *a* is extended out through the back of the ash-pan, and the lever by which it is moved, rises in a position corresponding with that of the reverse lever. The upper part of this lever has a socket, so that it may be used either for shaking the grate or may be transferred to the ash-pan lever and used for dumping. Short dead plates *E* make the adjustments for varying lengths of fire-box.

The grate not only burns coal of all kinds, even that which is so full of dirt as to be useless on ordinary grates, but produce on several of the western roads where it has been adopted, a marked fuel economy. At the Chicago Water-Works, and also at the Western Edison Light Co., as well as in several other places where they are in use under stationary boilers and where they have been tested, the evaporation duty, even with the poor western coals, has been high. The Edison Co.'s tests have been very carefully made. The figures are not at hand, bnt they are considered unusually good. The manufacturers are the Rocking Grate-Bar Co., 154 Lake street, Chicago, Ill.

Master Car Painters' Association.

SECRETARY'S OFFICE, KENT, Ohio,
July 22, 1884.

The Fifteenth Annual Convention of the Master Car Painters Association will be held at Boston, Mass., opening at 10 o'clock A.M., Wednesday, September 3, 1884.

Young's Hotel, corner of Court Street and Court Avenue, has been selected by the committee as the headquarters for delegates, and where commodious parlors have been secured in which to hold the meeting. This hotel is conducted on the European plan, and arrangements have been made for all delegates to secure rooms at from $1.00 to $1 50 per day, according to location. Those desiring to engage rooms will apply to Messrs. Hall & Whipple, managers of the hotel, five days previous to the opening of the convention. Meals can be had at the hotel or outside, as members prefer. The table is first-class, and charges according to what is ordered.

A cordial invitation is extended to master car and locomotive painters throughout the United States and Canada, to meet with us in convention. On roads having more than one shop, each is entitled to representation by its foreman painter. It is requested by the Committee on Questions that delegates bring working designs or tracing of ornamentation for posts, panels, and head linings, such as they have in use on their respective roads, as such exhibits will be beneficial to the members, and a comparison of the different styles will tend to forward and encourage decoration, which, although being at present cut off to a great extent in some shops from the exterior of the car, will be introduced again at no distant day.

From the many subjects submitted at the close of the last convention for discussion, the committee have selected the following, and hope they may prove of general interest, and it is the desire of the committee that each delegate examine the programme and come prepared to give his views on some one of the questions in addition to the regularly appointed committees. Any member of a committee unable to attend the convention, will forward his report to the Secretary six days previous to the meeting.

SUBJECTS TO COME BEFORE THE MEETING:

1. *The Best Method of Testing Varnishes to Secure the Most Satisfactory Results as to their Durability, with practical suggestions as to the time a car may safely remain in service before being taken in for re-varnishing.* D. D. ROBERTSON, Michigan Central Railway, Detroit, Mich.
2. *What is the most Practical Plan for Removing Old Paint from the Iron Work of a Locomotive and Tank, when necessary to be cleaned off to the Iron, and what is the Best Primer for Iron?* JOHN S. ATWATER, Hinkley Locomotive Works, Boston, Mass; A. J. BISHOP, Cleveland, Columbus, Cincinnati & Indianapolis Railway, Cleveland, Ohio.
3. *The Antiquity of Painting.* An essay by A. P. SWEET, Detroit, Lansing & Northern Railroad, Iona, Mich.
4. *Which gives the Best Results as to Wear and Durability: an Elastic or a Hard Drying Color on Passenger Cars?* C. E. FELCH, Southeastern Railway, Farnham, Que.
5. *A Plea for Light Colors on Passenger Cars, or Economy in the Railway Paint Shop.* R. MCKEON, New York, Penn. & Ohio R. R., Kent, Ohio.
6. *The Best Method to Pursue and the Material Used for Cleaning a Passenger Coach Preparatory to Touching Up and Re-Varnishing, with Formulas for Matching the Principal Car-Body Colors now in General Use.* WM. DAVIS, Canada Southern Railway, St. Thomas, Ont,; JOS. T. COCKBURN, Pittsburgh, Cincinnati & St. Louis Railway, Logansport, Ind.
7. *Interior Decoration of Railway Passenger Cars.* An essay by A. A. KELLY, Chester Valley, Pa.
8. *How can we Improve the Method of Painting a Passenger Car, Durability Considered.* E. HARTSHORN, Maine Central Railway, Augusta, Me.; JNO. RATTENBURY, Chicago, Rock Island & Pacific Railway, Chicago, Ill.
9. *What is the Best Method of Mixing the Priming Coat for a Passenger Car which Requires Re-Painting, when the Old Paint is Sound, and what for a Car when the Old Paint is Burned Off?* J. C. STOUT, Kansas Pacific Railway, Armstrong, Kan.

R. MCKEON, Secretary.

Corner-Irons.

There has been some discussion recently in regard to the value of corner-plates on box cars. Several car-builders have urged that they were objectionable, because they formed a pocket for the lodgment of water, and thus by keeping the wood damp, caused the sills and posts to decay at that point. Recently, speaking upon this point, Mr. Campbell, of the Chicago & Northwestern road, said that he had been using corner-plates for the last 30 years, and he had never found them objectionable on that account. If the posts are rotted out at this point it must be from improper construction or from a wrong application of the plates. He always puts them on in paint, giving the wood a good coat, covering it thoroughly. The iron is then bedded, and the joint made tight and secure.

At the West there are several styles of these corner-irons in use, each one of which has its advantages. The first is of course the plain wrought-iron strap or band cut from plate-metal and bent at right angles. The only finish needed is the clipping of the corners and punching of the holes. A cast-iron corner is often seen in which a deep pocket is cast to receive the pole in switching. This style is heavy and weak, cracking with comparative ease, and can hardly be considered a first-class job. On the C., C., C. & I. road, Mr. Turreff is using a malleable corner-iron which has much to commend it. The weight is only nine pounds and the cost 45 cents. It is ready for use as it comes from the malleable iron works, the holes being cast and all the finishing done in the tumbling-barrel.

Some roads are using a wrought-iron corner-iron struck in a die so as to make a shallow cup to hold the switch pole. The cup seems too shallow to be of any value, and is more likely to cause accidents than a plain one, because the men would be likely to depend upon it. In regard to the cost, or how it is liked, no facts are at hand.

The malleable and wrought iron corner-plates have an advantage over those of cast iron, as they can be driven on so as to fit tightly. With cast iron this cannot be done, and an open joint at the corner is likely to cause delay.

Rules Governing Repairs to Interchanged Freight Cars.

The following changes of these rules as revised last year, were made at a meeting of car-builders and others, at Saratoga, June 12.

Rule 6 was amended so as to read as follows:

RULE 6.—In such case a card 4½ × 6½ inches, in the form shown below, may be affixed under the body of the car, for guidance of other inspectors, preferably on the inside of the cross frame tie-timber, stating the defects with which the car will be received back, and when the car is so repaired the card shall be removed. Any company finding a car with a card on it may make the repairs called for by the card and present bill for such repairs to the company, putting on the card, the cards to be printed and filled in on both sides.

Rule 9 was amended by the addition of the following:

Resolved, Roofs lost off from cars while in transit, and which, upon examination, show faulty construction, namely, the ends of the car lines improperly fastened to the plates, tin roofs improperly cleated down, or rotten car lines or plates—the owners of said cars shall be at the expense of replacing the roof, and not the railroad company in whose possession the car was when the roof was lost.

Rule 10 was amended to read as follows. In the first paragraph:

RULE 10.—Wheels and axles used to replace those broken or worn out under fair usage will be charged to the company owning the car, and and all wheels removed for any cause shall be reported to owner of car.

The third paragraph was changed by striking out the words "or broken," so as to read:

"Wheels flatted by sliding, or wheels having treads or flanges chipped, are not to be considered as worn out under fair usage."

Rule 11, fixing prices for wheels and axles, was amended by three additional prices, and now reads as follows:

RULE 11.—Prices for wheels and axles furnished shall be as follows:

One new 36-inch wheel (less old) on same axle	$11.00
Two " " " " " "	21.00
One " 33-inch " " " "	8.00
Two " " " " " "	16.00
One " " " (less defective) on same axle	6.00
Two " " " " " "	12.00
One " 30-inch " (less old) " "	6.00
Two " " " " " "	12.00
One axle turned and fitted (less defective)	8.00
One new axle, turned and fitted (less second-hand)	4.00
Second-hand wheels (less old) per wheel or per pair	2.00
Loose wheels refitted on second-hand axle, per wheel or per pair	2.00

Rule 12 was amended by the addition of a blank form for bills rendered.

Rule 17, fixing prices for settlement for cars destroyed, was amended by reducing the former prices 10 per cent. The new schedule is as follows:

Eight-wheel box car, 32 to 35 feet long	$500.00
" " 32 feet long or under	480.00
" cattle car, 32 feet long or over	500.00
" ordinary stock car, 32 feet long or under	470.00
" gondola car, 20-ton drop bottom	430.00
" " coal car, 20-ton hopper bottom	505.00
" " 31 feet long or over	380.00
" ordinary gondola car, less than 31 feet long	355.00
" " flat car, 31 feet long or over	340.00
" " " under 31 feet long	330.00
Four-wheel gondola car with truck and drop bottom	305.00
" box car	230.00
" ordinary coal car	205.00
One pair 4-wheel trucks	210.00

The following new rules were adopted:

NEW RULE 19.—Running repairs, viz., to such parts as fail under fair usage or require frequent renewals from wearing out or failure resulting from faulty construction in cars belonging to private parties shall be paid for by the party owning the car. This not to include cars bearing the initials of any railroad company, or that are cared for by a railroad company. And it is recommended that railroad companies in making contracts for private parties insert this rule, or words to the same effect, in their contracts.

NEW RULE 20.—When a car is damaged or destroyed on a private track the railroad company delivering the car on such track shall be responsible to the car owner for making good the damage by the owner of said private track.

Old Rules 19, 20 and 21 are changed by the insertion of the two new rules, to 21, 22 and 23.

The Steepest Grade.

Much has been written about the construction of the mountain divisions of the Denver & Rio Grande; travelers have marveled at the 4 per cent. grades and the 15 degree curvatures of the remarkable narrow-gauge railroad which penetrates the most rugged cañons and climbs the most lofty mountain ranges of the Rockies. But nobody has ever well described the wonderful little feeder of the Leadville Division which modestly leaves the main line in Brown's Cañon and ascends the mountain gulches to the east with the steepest grades and the heaviest curves in the world that are overcome with the ordinary drive-wheel locomotive. Afar up in this range of mountains, seven miles away, and nearly 3,000 ft. higher than the bed of the cañon, is the famous Calumet mine, from which is extracted the hematite iron ore that keeps in blast the furnaces of the Bessemer works at Pueblo. Every morning of the year a ponderous locomotive and a small train of cars toil up this steep, and every afternoon they make the perilous descent to the valley loaded with iron, with the steam brakes on the cars, the water pressure on the locomotive drivers, and a man standing at the brake-wheel of each car.

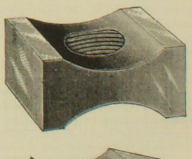
Some few years ago, when the operation of the line was commenced, runaway accidents were of almost daily occurrence. The seven miles were within a brief period, strewn with the wrecks of cars and locomotives and iron ore. The most discouraging results attended the persistent efforts to make the line serve the purpose for which it was constructed. Day after day control over the descending train would be lost; some defect would interfere with the working of the steam brake; and even with the brake in successful operation, the train would take a crazy notion and go flying down the mountain sides, along the brinks of fearful precipices, through the rock-bound gullies, and around the acute curves, like a bolt of lightning. The train hands would leap for life, and then the locomotive and cars would be dashed into fragments. In all these accidents, however, nobody was hurt. Thousands and thousands of dollars' worth of rolling stock is said to have been destroyed before a successful system of operation was established. Only very few of the higher officials of the Rio Grande realize how terrible was the experience of these rides, and it is told of two of them who once summoned sufficient curiosity and courage to make the journey, they were so frightened that they hung on to the steps of the caboose, expecting every moment to have to leap for life.

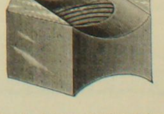
Finally, extremely heavy locomotives were built, and a force of exceptionally brave trainmen were secured. The latter were instructed to cling to their post at every hazard, and to never flinch in the moment of danger. Not a serious accident has been recorded since. Starting from the mine every brake is manned, so that in case the steam should fail the train could be checked. While there have been several runaways in two years there has not been a wreck. The sight of one of these trains descending is one of thrilling interest the sparks from the car wheels cutting a pathway of light down the mountains which can best be described as having the appearance of a molten stream of fire rushing down to the river bed of the cañon.—*Leadville (Col.) Chronicle.*

THE Michigan Central road is remodeling ten of its new standard freight cars for the express freight business. They are to have Miller platforms and air-brakes. End doors have been put into them, and they are painted yellow to match the passenger train cars on the road. They have Thielsen trucks, the same as the ordinary freight cars. They run in passenger trains like any other cars of their class, and the truck (which is a modification of the regular Thielsen) made by Mr. Robert Miller, seems to work as well as could be desired. Six of these cars have just been put into the service. They are 34 feet long, have an 8-inch iron transom, and can be turned out very cheaply and quickly.

The "New" Nut.

The cuts represent the square and hexagon forms of the new nut manufactured by the Dwight Manufacturing Co., Springfield, Mass. It is claimed that this style of nut has advantages that make it superior to any other nuts now in use in respect to strength, cheapness of manufacture, and as being a perfect nut lock. The direction of the concave surfaces being across the fiber of the iron, makes the strength of the nut equal to the initial strength of the bolt, while common nuts give only the strength of the thread. A larger number of these new nuts can be produced from a given quantity or weight of iron, and it is said that in practical use, and when made of ordinary iron, they will stand a strain that will strip the threads of other nuts, its grip being literally unbreakable, and the ever present spring preventing them from turning backward when used on track bolts. They will, on the contrary, take up any slack yielded by a passing train. They will soon be made of steel, which will increase their strength and durability. Further information can be obtained by applying to George Dwight, Jr., Springfield, Mass.





FREIGHT CAR DRAW GEAR OF THE CHICAGO, ROCK ISLAND & PACIFIC RAILROAD.

(From Photographs Taken in the Shop.)

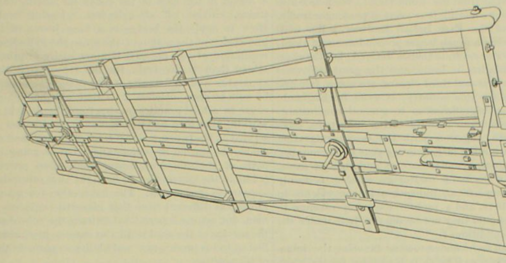


Fig. 1.

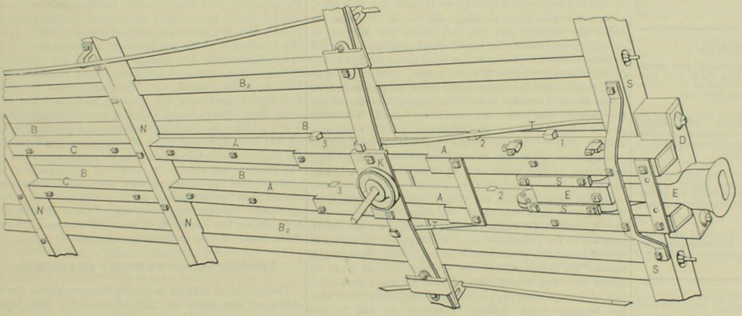


Fig. 2.

There are few subjects that are attracting more attention among car-builders than the arrangement of draw-gear to withstand the heavy work which our long freight trains necessitate. Upon the Chicago, Rock Island & Pacific road, Mr. Verbryck, the Master Car-Builder, at Chicago, has introduced a style of putting up draw-gear upon freight cars which is worth studying. This method has been in use long enough to demonstrate that in service it is very strong, and wears as would be expected from its design.

The engravings show the details of the plan, which consists in using long draw-timbers well secured to the center sills, and then blocking up between the needle-beams so as to secure a continuous bearing from one end of the car to the other. Fig. 1 shows the floor frame of the car, turned up so as to show the construction, tie-rods, etc., and Fig. 2 is an enlarged view of the draw-timbers, draw-bar spring pocket, blocking, etc. The draw-timbers *A A*, are tapered from the end sill backward to the needle-beam against which they rest. They pass directly through the iron bolster, and are slipped on the lower side as well as tapered. Three cast-iron 2-inch keys, square, 1, 2 and 3, in Fig. 2, are let into both sill and draw-timber, holding both fast, and take part of the strain of buffing and drawing. In addition to these keys, there are seven bolts going down through both sills and draw-timbers. The oak blocking pieces *C C* are cut in between the needle-beams *N N*, and are bolted to the sills *B B*, with two bolts each. These transmit the strain of buffing the whole length of the car in direct lines, without throwing any oblique strains upon the center sills, and without any tendency to draw down the end of the car. This alone is a decided advantage, as it relieves the car from the serious strains which are more injurious to the framing than to the load. With shocks transmitted in a straight line, there is little danger that a sill will give out over the bolster, but there is cause for the end of the car coming down. The draw-timbers are about an inch thinner than the sills, but the blocking pieces are 4 inches square, and flush with the sills on both sides.

The draw-bar is the standard pattern of the road. It has a wrought-iron pocket with a cast-iron head. The side plates *S S* hold the draw-springs in the usual way. The nuts on the bolts holding the draw castings are locked by small blocks of wood driven between them and nailed in place. This form of locking nuts is in use very generally at the West. The iron bolster is held in place by rods *T T*, which are hooked over it and pass through the end sill and through the buffer block. The bolster at the center plate *K* comes against a shoulder in the draw-timber. Altogether, this floor is about as stiff as could be desired, and when put up carefully, as is Mr. Verbryck's practice, seems to be able to resist the hard usage of even the Chicago freight yards.

Inside Finish of Passenger Cars.

To the Editor of the National Car-Builder :

The June number of your valuable paper contains a communication signed "Inspector," in which the writer discusses the subject of the inside finish of passenger cars, and expresses his dislike of the solid mahogany style which is now so prevalent. Had he ever seen the inside of the passenger coaches recently built at the shops of the Boston & Albany road his views, I think, would have been somewhat modified. Although these cars have an exclusive mahogany finish, they are as well liked by passengers as any of the handsomest cars in which light colored woods predominate. Permanency of effect and lasting wearing qualities are important considerations with car-builders, who have not only to suit the esthetic tastes of the public, but look after the interests of the roads as well. Mahogany is a durable wood, and like choice wine improves with age. Some of the light colored woods may be durable enough, but their beauty certainly is not improved by service. Even when pains are taken to give these woods a proper finish (a thing which is too often neglected) they can not hold their own with mahogany.

In matters of pure decoration it is easy to start a mania for something new, and it will have a run because it *is* something new and without much regard to its intrinsic merit. Lincrusta is now coming into vogue a little and may possibly increase so as to be "all the rage" for a time, but when the craze has had its run the pendulum of fashion will swing back to the good old mahogany again. Lincrusta is certainly very handsome as well as something of a novelty, but in order to retain its beauty it must be placed so the heads and hands of people will not come too much in contact with it. Whether it will expand or swell with age and exposure in car service can be determined better a few years hence.

As regards carving, I admit that it is a kind of ornament that is not to be underrated in its application to almost every kind of interior wood construction. But I would ask where we are to get our carving, or rather where are we to get our designs? Carvers are plenty enough, especially if you are ready to pay the prices they ask. But as a rule they do not bring their designs with them, and when they do bring them we are not carried away with their ideal excellence and cunning workmanship. If we had good designs carving could doubtless be made a very attractive feature of car decoration, but as things are now we shall have to content ourselves with what we can do and do well.

Wood-Worker.

Repairing Foreign Cars.

To the Editor of the National Car-Builder :

The question as to the amount of expense incurred in keeping up the repairs of foreign cars has been much discussed, and has given superintendents of car departments no little anxiety, especially upon trunk lines, where three-fourths of the cars repaired belong to other roads. This is certainly no advantage to the trunk lines, but it is, on the contrary, a very decided advantage to the railway companies who keep cars in service that are so dilapidated as to be unfit for use in through traffic. The superintendents of such roads know, or should know, the condition their cars are in, and how many there are of the respective classes that need a thorough overhauling. But does his anxiety about the matter make him lie awake nights? In case he should happen along just as one of these cars is about to be loaded at the freight house, would he have it chalked for the shop and have it put on the track among those designed for heavy repairs? Or would he simply walk by and say, "If that old trap goes through to destination and gets back here again without repairing, I shall lose my guess." On the other hand, should not superintendents who desire and try to keep the rolling stock of their roads in good condition, be protected by requiring that the owners of foreign cars should keep them in as good condition as are the cars of receiving roads, especially line cars? If every road would make a special effort to keep its cars in good serviceable condition (a thing which certainly can be done), it could then afford to refuse cars that are not up to the standard, and at the same time be able to give more attention to its own cars that need repairing.

Inspector.

Paper Head-Linings.

The Michigan Central road has used paper head-linings in its passenger cars for a considerable time, and some account of the way these linings are put on may be of interest.

Trunk-board is used for the lining, and is painted on both sides and on the edges. This is found to be necessary in order to completely protect the board. Formerly it was used in large pieces, but for various reasons the width is now cut down to about 12 inches in the clear. This makes the individual pieces pretty small. Large sheets have been tried, but when they are used the surface is liable to become somewhat irregular, the board not being strong enough to hold its shape in large pieces. A thin ceiling of ⅜ inch matched stuff is put into the car roof, and is the same as was formerly used in putting in canvas linings. The lining board is run through the tinman's rolls and bent to the exact curve wanted for the roof. It is hardly worth while to put up the board without a lining under it, although it has been done, and large pieces have been used without support and found to stand fairly well; yet there is a sufficient twisting from the weight of the board to make the job seem unsatisfactory to those who use wooden linings and are accustomed to perfectly flat surfaces.

One great advantage of these linings is their cheapness, and another is that a complete set for a car may be prepared before the car comes into the shop, and be ready to go in as soon as the car is ready to receive them. Some of the latest designs in this kind of decoration to be seen at the Detroit shops of the road are representations of autumn leaves on a ground grained to imitate oak, the effect of the graining being in such case quite as good as that of the natural wood, with the additional advantage that the tendency of dust and dirt to adhere to the grained surface is very much less than it is to the unpainted wood.

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed, and drafts and money orders made payable, to* THE NATIONAL CAR-BUILDER. *Communications for the attention of the Editor should be addressed* EDITOR NATIONAL CAR-BUILDER.

Advertisements.—*Nothing will be inserted in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *The editorial department will contain our own views and opinions; and the rest of the reading matter, aside from advertisements, will be such as we consider of interest to our readers.*

Contributions.—*Articles relating to railway rolling stock construction and management, and kindred topics, by those who are practically acquainted with these subjects, are especially desired. Also early notice of changes in railroad officers, organizations and names of companies.*

Special Notice.—*As the* CAR-BUILDER *is printed and ready for mailing on the last day of the month, advertisements, correspondence, etc., intended for insertion, must be received not later than the 25th day of each month.*

SUBSCRIPTIONS *to the* CAR-BUILDER *will be received, and opies kept for sale, at the following places :*

A. WILLIAMS & CO., 283 *Washington St., Boston, Mass.*
L. SCHAFFNER, *Cigar and News Dealer, Grand Pacific Hotel, Chicago, Ill.*
WILLIE H. GRAY, 306 *Olive Street, St. Louis, Mo.*
ROBERT CLARKE & CO., 65 *West Fourth Street, Cincinnati, Ohio.*

SECOND-CLASS CARS.

It is a question whether railroad managers in this country will not before many years be forced to consider the expediency of providing second-class cars for all passenger trains upon roads where the passenger traffic is at all heavy. The cars that compose these trains are public conveyances, and all sorts of people want to ride in them. It is for the interest of railroad companies to carry as many passengers as possible at rates that will afford a profit, and it is for the interest of the public to have the rates as low as possible, and the profit derived therefrom distributed so that each class shall pay its fair and equitable share of it and no more. No matter how much we may ignore, theoretically or politically, the existence of class distinctions as something foreign to our system of government, they do exist nevertheless as rigorously and as unavoidably here as anywhere else, and in the relations of business they have got to be dealt with as such. Hitherto in our railroad practice these distinctions have been disregarded, there being no second or third class cars on our roads, in the meaning of these designations as applied to cars on European roads. Parlor and sleeping cars with us are special accommodations peculiarly American. Emigrant cars are for emigrants, and not for the great mass of people who would like to travel at less than the regular uniform rates, even if the cars were a little less luxurious and stylish. It may be said, then, that all passenger cars in our trains other than parlor and sleeping cars are first class, and that every body who rides in them on purchased tickets is presumed to pay regular fare, or what would be first class fare if there were any second class. In view of this surface condition of things, it would be interesting to know just to what extent second class tickets at reduced rates are sold over through routes, the buyers of them having free access to all the cars of a train except parlor and sleeping cars, and mixing themselves up among the mass of passengers who have paid the regular and higher fares. That a great deal of this kind of thing is done there can hardly be any doubt. That it is likely to increase seems highly probable, and the question is, how long and to what extent can this discrimination be practiced before it will culminate in the introduction of second class cars in accordance with the system which prevails so extensively in Europe.

The official return of passenger traffic on thirteen leading English roads for the last half of 1883 showed that 87 per cent. of the whole number of passengers carried was third class, and that 75 per cent. of the revenue from passengers was derived from the same class. We notice also a recent statement covering four years of passenger traffic, ending in 1883, of the East Indian Railway, a line 1,500 miles long, showing a much larger preponderance of third-class passengers and revenue thence derived; but the character of the population in India, and the great difference in rates between first and third classes, are not a fair criterion, of course, for this country, or even for England; but the results are significant as to general conclusions. The steady growth of our manufacturing industries, especially at the South, together with the heavy emigration from abroad, are adding largely every year to the number of those who require second-class cars and cheaper fares, and if these are a necessity in Europe, as they certainly seem to be; if they are an indispensable convenience to the population there, and a prolific source of revenue to the roads, why should they not become so here under the same or similar conditions?

We do not wish to be understood as favoring the introduction of class cars so long as it is cheaper for the roads to carry all passengers in one class of cars, as they are now doing. We would only suggest whether the time is not coming when it will pay the roads to enable people to classify themselves to a greater extent than they can now, by providing a class of cars at lower rates. To have two kinds of cars in every train where there is now but one kind, exclusive of parlor and sleeping-cars, would of course increase complication and cost, and unless the increase of earnings from second class travel would more than cover the increased cost, the change would be of no advantage to the roads, whatever it might be to the public. Assuming, however, that second-class fares would cover the increased cost, it may be asked whether, with the increase of that class of our population who are not sensitive about traveling second class, a state of things is to be continued always which throws people together promiscuously when they would prefer to sort themselves so far as they can do so on the basis of a difference in fares. Class cars and fares would not of course make everything congenial by separating the vulgar from the refined, or the unsavory from the clean, nor would the rooted prejudice against class distinction be at once overcome. Many people who for economy's sake would prefer to travel in second class cars, would at first go in the first class for the name of the thing, even if they traveled less in order to afford it. They would feel reluctant to make an exhibition of their poverty even to strangers, although their dress and baggage might indicate it almost as well as the getting in or out of a second class car. But this sensitiveness would be felt less keenly by familiarity with the custom, and would finally be overcome and laughed at.

There is another branch of this subject that has already attracted some attention in Europe, and which is, that the carrying of first class passengers at the existing rates brings little or no profit to the roads. If there is any profit from this source on European roads it is in the aggregate quite inconsiderable as compared with the profit derived from third class passengers, the entire receipts from the first class amounting to only a small percentage of the total receipts from the third class. This confirms us in the opinion that if all the elements of expense that are involved in the running of parlor and sleeping cars in this country could be correctly ascertained, it would be found that travelers in these cars contribute much less to the profits of the railroad companies than the people who travel in ordinary coaches.

OPERATING THE WESTINGHOUSE BRAKE.

The importance of thoroughly educating train men in the operation of the Westinghouse brake is very generally recognized by railroad men, and it may also be said that if travelers were aware to what extent their comfort as well safety is dependent upon a thorough understanding of its operation by locomotive engineers, they would insist that every engineer should graduate from a "brake school" as an indispensable test of capacity.

Mr. E. B. Ross, the Master Mechanic of the East Buffalo shops of the New York, Lake Erie & Western road, has a complete and well-arranged apparatus for schooling engineers in the use of this brake. The apparatus consists mainly of six cylinders and six reservoirs, with a sufficient length of pipe to represent a train of twelve ordinary passenger cars. The usual air pump and engine reservoir are placed against the wall of the shop within a few feet of the cylinders. The valves, cocks, hose couplings, connections, etc., necessary for the train, are placed so as to be easily reached and operated. Every brakeman, fireman, conductor or engineer, before he can enter the passenger train service of the road must go through a course of instruction in this school, and demonstrate his ability to handle the brake properly, as well as to comprehend the details of its construction and working. The first lesson is to learn how to make coupling properly. This may be, and often is, imperfectly taught by the old hands, but many engineers who have handled an engine for years, or a man who has been a brakeman on a passenger train long enough to know how to do it, finds, upon testing his skill at school, that he does not know it all, by any means. When a pupil has mastered the first lesson, he is then instructed in the uses of the different cocks and valves. If he is already an engineer, his knowledge of the construction of the valves is put to the test. Then follows a lesson in the uses of the cocks for taking cars out of trains, cutting off air cylinders, releasing brakes, etc. How to apply the brakes is a long lesson of itself. A knowledge of the action of the air in the cylinders and the regulation of the pressure is more easily acquired in the school than on the train, for the reason that the entire apparatus and the results of any particular operation can be seen at once. Hence it is that old hands often discover in school practice reasons for difficulties in practical working that they had not been able to discover while in service on the trains. Gauges on the pipes and cylinders enable the learner to understand what is going on in all parts of the school apparatus, and often prove certain points in the instruction to be right that otherwise might appear to be wrong. The instruction for train men is somewhat different from that given to engineers and firemen, but no one is permitted to leave the school and enter the service of the road until the master mechanic is satisfied as to his proficiency and ability to perform the duties of his position.

With respect to these brakes, there are one or two late improvements that should have a place upon every road in the country which uses the automatic system. While it may be said that these improvements are, in a certain sense, well known, they have, nevertheless, not received the attention they deserve. The pump regulator, for example, ought to be used on all the Westinghouse air pumps, and yet, although railroad men have very generally heard of it, it has not been put on the pumps except in a comparatively few cases. By its use, the pressure in the air cylinder can be kept at any fixed point that may have been determined on. The pump, when it works, goes at full speed until the pressure is reached and then stops dead. There is no wasteful one-stroke-per-minute work, which is injurious to the pump and not an economical way of compressing air. With a pump thus controlled the engineer is certain of having an ample supply of air. The pressure will always be sufficient for taking off the brakes. Had this regulator been used, some of the complaints about the automatic brake would never have been heard of. Another important improvement is the double hose, which has hardly been thought worthy of notice. Time, however, will probably demonstrate its necessity.

PROTECTION OF FREIGHT TRAIN MEN.

The matter of making more effective provision for the safety of that class of railroad employés who handle freight cars seems to be approaching a crisis, but whether the crisis is to be one that will merely keep on reproducing itself, like the flurries of speculation in Wall street, will be apparent in a year or two perhaps. What has given a new phase to the subject, as evinced by the tone of the recent discussions in the Car-Builders' Association, is the probability of legislative interference unless railroad companies do something to remedy the evil, and do it so promptly and effectively as to make such interference unnecessary. This is what has brought about the impending crisis. But we do not apprehend, so far as any positive and final action is concerned, that anything will be done precipitately either by Railroad Commissions, Legislatures or the Car-Builders' Association. Commissioners and legislators of the average sort are not essentially different in their natures from other people, and when they come to a close grapple with the car-coupling question, saying nothing about brakes, dead-blocks, running boards and ladders, they will find it just as difficult to settle in their own minds what is best to be done, as the railroad men have found it to be. When it comes to the framing of laws prescribing and enforcing the use of particular appliances, there will be plenty of reasons for making haste slowly by finding out what is best to be done before doing anything. This is just what the car-builders have been trying to do for the last ten years, but it must be borne in mind that their responsibility has been limited to mere recomendations, a compliance with which by railroad companies is entirely optional. A much graver responsibility, however, attaches to those who enact laws which must be enforced by the civil authorities.

The question of the better protection of freight train men involves coupling devices, the positions and dimensions of buffer blocks, the operating of hand-brakes, climbing of ladders and the passing from the roof of one car to another. The lack of any uniform system of construction as to these details is of itself a proof that the best means are not in every case made use of. After forty years of experience in railroading, why should there be such a contrariety of opinion among railroad men in regard to the position of buffer blocks, some calling them "man-killers" when attached to a car in a certain way, while others insist that they are, when attached in the same way, a necessary protection not only to the men but to the cars also? And if no uniformity in practice can be brought about in respect to such a simple matter as this, how can uniformity be expected in reference to coupling devices, automatic or otherwise, complicated as they are by the claims of rival patentees eager for royalties, and the difficulty of testing in any satisfactory way the relative merits of a few of the best of them even. With the present outlook, it would really seem to be a boon to the railroad companies represented in the Car-Builders' Association, if the State Legislatures and Railroad Commissioners would interpose their superior wisdom in behalf of the trainmen, and decide upon a standard coupling for freight cars. But in doing so they have to take the responsibility also, which is no trivial matter in view of the interests involved.

The primary object is, of course, to lessen the number of casualties in the making up and running of trains. These have been estimated as high as 1,500 killed on the railroads of this country every year, and upwards of 5,000 injured. Supposing these figures to be approximately correct, it would be interesting to know how many of these victims are killed and injured from causes beyond their own control. When passengers are hurt, this is a very important point, as it limits the responsibility of the companies, and it is not easy to see why the same rule should not apply in the case of employes in freight service. Getting caught between two cars is not always owing to defective couplings or badly arranged buffer blocks. A very large proportion of these accidents is undoubtedly due to stupidity, recklessness and the lack of ordinary judgment on the part of the men themselves. If a correct balance could be struck, it would be found that in a vast number of cases the men are more to blame than the managers. Experience has proved that as a rule men prefer to take the hazard of going between the cars to handle the coupling links rather than use a stick for the purpose ; or, in other words, step deliberately into a trap, knowing it to be such, in which thousands have already been caught and in which more will continue to be caught, until some marvel of a self-coupler is invented that will not only do the coupling, but keep foolhardy men from going between the cars when there is no necessity for it. The employment of men of a higher grade of intelligence and the payment of better wages, would diminish very materially the ghastly record of accidents, but as this is not practicable, financially, the men who are now employed must be protected as far as possible against the results of their own imprudence.

TRUCKS OUT OF SQUARE.

The greatest difficulty in building trucks is to build them so they will keep square. The ordinary method of centering the pedestals, and then from the center-marks measuring diagonals, is in theory very well, but practically it gives only a very rough approximation, and the journals are not by this means necessarily parallel, nor do they with any certainty lie within a rectangle. Mr. Robert Miller, of the Michigan Central road, says he has found that journal boxes will vary from $\frac{1}{16}$ to $\frac{3}{8}$ of an inch, according to circumstances, a variation which throws the position of the wedge out of the center line to the same extent. If these variations happen to be all in one direction, throwing the wedges all forward or all backward, then the truck still remains square, and the journals will be in their proper places, provided, of course, that the amount of variation in the boxes happens to be of the same quantity. If they are different, the want of parallelism in the axles will be that produced by the difference of their errors. Mathematically, if the signs of the variations are unlike, the truck will be out of square by the sum of the difference between them—that is, if the errors in two boxes on one side be different, and the errors in the boxes on the other side be different and opposite, the axles may be out of square to the extent of $1\frac{1}{2}$ inches merely from differences arising from the variation in the castings. It is, of course, improbable that errors as large as this, and of opposite kinds, should be found in one side of boxes for a truck, or that they should be put together in such a way as to produce this maximum error. The possibility, however, of doing this, remote as it is, is not assuring to the car-builder, and it certainly behooves all builders to look into this subject of the position of the wedge in the journal box, and devise means, either for centering the box, or, what is better still, for insuring the perfect setting of the cores when the box is cast.

PRODUCTION AND CONSUMPTION.

The effects of the short lived panic in Wall street which occurred a few weeks ago are still apparent in the occasional reports of new failures and the continued dullness in general trade. The indications are, however, that there is to be no universal crash and wide spread bankruptcy, as has been predicted by sundry people of bearish proclivities. The great boom in railroad construction which began in 1878 and added 25,700 miles to the previous mileage within the brief period of four years, has run its course without producing any greater reaction than might have been expected. There was overproduction for the time being, and a vast number of collateral industries participated in the overdoing. Or, to put it in another way more acceptable to some reasoners, there was, and is still, a great under-consumption of commodities. The excess of load was too great for the camel, or else the camel was not equal to the load. It matters not which way it is put. There may not have been any excess in the 11,000 miles of new road built in 1882, but the figures have a suggestive look. There may have been no excess of manufactured products, imported merchandise, wheat, mining stocks, market-cornering speculators, blind and unreasoning confidence in kite-flying securities, or of pleasure seekers who crowd the outgoing steamers to Europe to expend millions abroad that have been earned at home; but something has evidently disturbed the equilibrium of things.

Some of the old political economy cranks assert that production is the only source of wealth, no matter whether the consumers have anything of an equivalent value to give in exchange. But it is obvious that whatever exceeds the purchasing power of a community, is not a source of wealth but an expenditure of capital and labor which impoverishes because it brings no remuneration. The two factors of production and consumption must hold approximately an even pace. So long as the users of shoe-pegs or locomotives make the manufacture of these products a source of profit to the producers there will be a steady market for them, and no trouble can arise while the reciprocal relation is maintained between the factors. The following paragraph from the July number of the *Bankers' Magazine* is a very clear and forcible statement of the whole matter :

> The modern facilities for production are so perfect that it is easy to produce most things that are needed on a stupendous scale. It was maintained by the older political economist that overproduction was impossible. At some price or other every thing would find a buyer and consumer. But the error of this doctrine is clearly seen and admitted. No person needs more than a certain amount of food or clothing. No person can comfortably eat two dinners on the same day. If, therefore, a second dinner is cooked for him, either it is not eaten, or if it be, he is the worse for it. Consumption, therefore, is limited. Production must be governed by this limit or exceeded at an ever increasing loss.

IN the course of the discussion at Saratoga on the subject of car couplers, Mr. Wilder, of the Erie road, made a very sensible suggestion to the effect that the validity of patents with respect to these devices was foreign to the question under discussion, which was that of determining which coupler is the best. This, as it strikes us, was a point well taken in view of the extreme difficulty that has so far been experienced in the attempts to make a choice. The primary question should be kept clear of all entanglements, and when that question is disposed of there will be time enough to look after the patents. Five years ago, the mere mention of a patent coupler (and all couplers are patented), by its name in open convention, was pretty sure to raise a tempest of excitement and call forth vigorous protests against advertising patented wares. This sensitiveness on the part of members has very much abated within a year or two past, and the names of couplers and coupler patentees figure quite extensively now in reports of committees and in the discussions. This is substantial progress. But the selection of a coupler on its mechanical merits is one thing, and the validity of the patent another. The two questions should be kept separate.

THE AJAX METAL CO., of Philadelphia, made handsome exhibits of their metal products at the recent convention of the Master Mechanics at Long Branch, and of the Master Car-Builders at Saratoga. The base of the Ajax Metal composition is Lake Superior copper, and the claim is for a chemical amalgamation whereby the molecular forms are changed, making the composition at once exceedingly homogeneous and of a peculiar oily nature, while the fiber of the metal is toughened to such an extent that in tensile strength it almost equals steel. The wearing qualities of this metal are undoubtedly superior. In view of the well attested experience of the best known master mechanics and others, it cannot any longer be considered an experiment. It is manufactured in three grades, of which No. 1 is especially adapted to railroad use. The claims made for it are in brief :

1. A greater mileage.
2. There is less friction, and, consequently, less wear upon the journal.
3. The metal can be melted as often as desired without deteriorating its quality.
4. In pouring, a loss not to exceed $1\frac{1}{4}$ to 2 per cent.
5. Tensile strength, 29,600 pounds, as made by the United States government.
6. A saving to any road that adopts its use.

The company has just announced a new feature in its business, which will enable railway companies to make their brasses from Ajax metal cheaper than heretofore and at less cost than by any other standard metal. They have decided to sell to such companies as desire it their "white metal amalgam" and give them the formula for its use. This amalgam can be used with copper in place of tin and the same results obtained as the company does. The advantages claimed are a saving of the profit on ingot metal, and the consumption of old brasses.

A. FRENCH & CO., of Pittsburgh, Pa., have issued a new illustrated pamphlet containing classifications, specifications and tests of their standard springs for locomotives, including driver, truck and tender springs. By long and careful investigation, involving the measurement by an expert of more than 3,000 engines, the proportions of these springs have been perfected and systemized into a standard, so that those of the same lengths are interchangeable, and require only a slight alteration of equalizing levers and hangers. These springs carry the engines better, save a large percentage of steel, are lighter, more elastic and durable than those generally made to order. The company recommend the adoption of these standard dimensions as securing the advantages of uniformity and system, enabling railway companies to carry springs in stock, which can not be done so long as they continue to adhere to sizes and dimensions of their own, however satisfactory they may be in themselves. The pamphlet contains directions for ordering by designated letters and numbers. The manufacturers carry in stock, and are otherwise prepared to furnish without delay, springs of these standard proportions and dimensions. There are also formulated directions for parties who order springs for freight and passenger cars, and on an opposite page a finely executed engraving, showing the proper modes of applying elliptic springs to car trucks so as to prevent an oscillating motion of the cars.

THE rapidity with which freight cars are constructed at the Mt. Clare shops of the Baltimore & Ohio Railroad is quite remarkable. A gang of nine men can build a box car of the kind that is illustrated and described in this issue of the CAR BUILDER, in one day. A car has been built in nine hours, by as many men, but ten hours is considered the regulation time. In the old freight shops at this place there are four tracks for construction, and upon these four gangs of men turn out 24 cars per week. If more than this is done, the men are paid for overtime. The side and end frames are put together on the floor of the car and then set up. The sides are set up in four sections, but without the plates. The plates are then lifted and held to the level of the girths by blocking sticks underneath. The plates have no holes in them for the rods to go through, but there are six castings bolted to the plates, and the rods are run through these castings, after which the stick is lifted upon the frame and driven into place. The end frames are then lifted, the corner posts put in place and pinned to the side frames. The whole end frame, like the sections of the sides, is framed separately and is set up in a few minutes. The use of castings and sill bolts makes this method of framing possible, and leaves the timbers solid where they would be the most weakened by boring holes. The bolt holes for the castings pass through the neutral axis of the timber, causing little or no diminution of its strength.

The specifications for these cars call for first-class timber, the inspection of which is very rigid. An abundant supply of oak is obtained along the line of road; it is of excellent quality, and the sources from which it comes are not likely to be exhausted for a good while yet.

Association Conventions.

Master Car-Painters' Association, annual convention, in Boston, on Wednesday, Sept. 3.

Road-Masters' Association of America, annual convention, in Indianapolis, Ind., on Wednesday, Sept. 10.

Association of American Railroad Superintendents, semi-annual meeting, in Boston, on Tuesday, Sept. 16.

American Street Railway Association, annual convention, in New York, on Wednesday, Oct. 15.

Our Directory.

We note the following changes since our last issue. Our readers will do us a great favor by giving us prompt notice of any changes that may come to their knowledge or of any errors that may be noticed in our list:

Boston & Lowell.—C. S. Mellen has been appointed Superintendent of the entire line; George E. Todd is Superintendent of the New Hampshire Division, and James A. Taylor is Superintendent of Motive Power for the entire line.

Chicago, Milwaukee & St. Paul.—A. J. Earling has been appointed Assistant General Superintendent. S. J. Collins is Superintendent of the Prairie du Chien and Mineral Point Divisions, and R. B. Campbell is Superintendent of the consolidated Chicago and Council Bluffs and Illinois and Iowa Divisions.

Chicago & Atlantic.—F. Broughton has been appointed General Manager; J. H. Parsons, late Division Superintendent, has been appointed Superintendent, and J. H Tinney, late Division Superintendent, has been appointed Assistant Superintendent.

Chicago & West Michigan.—George C. Kimball has resigned his position as General Manager.

Fitchburg.—George A. Coolidge has resigned his position as Superintendent of Motive Power.

Grand Trunk.—James Stephenson has been appointed Superintendent of the Grand Trunk Division, vice W. J. Spicer, who has accepted the position of General Manager of the Chicago & Grand Trunk.

Hannibal & St. Joseph.—S. E. Crance has been appointed Superintendent in place of T. L. Dunn, who has gone to the Louisville, New Albany & Chicago.

Kansas City, St. Joseph & Council Bluffs.—J. R. Hardy, heretofore Assistant Superintendent, has been appointed Superintendent, and A. D. Barnard is the successor of Mr. Hardy.

Louisville, Evansville & St. Louis.—C. F. Dalton has been appointed General Superintendent. He was formerly on the New York & New England road.

Louisville & Nashville.—B. Dunham has resigned the position of General Manager, and has gone to the Baltimore & Ohio.

Missouri Pacific.—Third Vice-President, H. M. Hoxie, assumes the duties of General Manager, in place of A. A. Talmage, who has gone to the Wabash, St. Louis & Pacific.

New York, West Shore & Buffalo.—C. D. Gorham is now General Superintendent. D. B. McCoy has been appointed Superintendent of the Buffalo Division, in place of F. E. Merrill, resigned.

New York & New England.—Wm. H. Turner has been appointed General Superintendent; J. B. Henney, Superintendent of Motive Power, and E. G. Allen, Superintendent of Eastern Division, vice W. H. Turner, promoted.

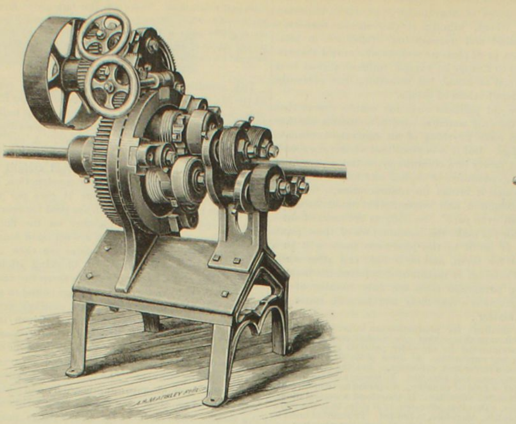
Saginaw, Tuscola & Huron.—M. B. Wilkinson has been appointed Superintendent, vice C. S. McMillan resigned.

St. Paul & Duluth.—J. H. Fisher has been appointed General Superintendent to succeed H. P. Breed, resigned.

Terre Haute & Indianopolis.—F. C. Cleaver has been appointed Master Mechanic at the Terre Haute shops.

Texas & St. Louis.—P. J. Milan has been appointed Master Mechanic of the Texas Division, in place of W. E. Phillips, resigned.

Vicksburg & Meridan.—J. D. Browne has resigned his position as Mechanic.



OTTO'S PATENT FLUE-CLEANING MACHINE.

The machine represented in the cut is designed for removing the crust of lime from the outside surface of boiler flues of diameters ranging from 1¾ to 3½ inches. This crust is very difficult to remove in a cleaning-roller or tumbler, and expensive also, on account of the waste of steam and time. This machine will effectually clean from 2 feet to 6 feet of flue per minute, and without injury to the flue. It occupies very little room, is almost noiseless, makes but little dust, and is operated by a laborer who introduces one flue at a time, which is revolved and fed through like a screw, and drops off on the opposite end without assistance. The machine is so constructed that no countershaft is needed. It is provided with a double-clutch gear, by means of which it can be reversed in case of special need, and set the pulley free to avoid countershaft. To set the machine it is only necessary to place it in line with pulley on shaft that power is taken from.

Three revolving shafts, provided with circular blunt edged steel cutters, are set obliquely in adjustable boxes, the central line of the flue passing between them; these boxes are connected with a movable ring, governed by a worm screw, which is operated by the lower hand wheel, and each of them is provide dwith a small adjustable circular assisting cutter with cross teeth, which cuts the lime lengthway; after being cut crossways by the circular cutting plates on revolving shafts, the scale is consequently reduced to square particles in a rough manner; the same process is repeated by four circular finishing cutters revolved by the flue, two of them being provided with length teeth and two with cross teeth, and placed adjustable on the same incline plane to the extending plate. Having the circular cutters on the revolving shafts on the same incline plane, the first and second cutters on each shaft will not come in contact with the flue but will afford an easy entrance, acting like a mill, preventing the machine from choking; there is no sticking as the cutters are all revolving. To overcome oval places or uneven diameters, the cutters are arranged to give a little, and when passed, immediately come back to their original position and, by a slight movement of top hand wheel, the machine can be reversed (or stopped) and the bad place cleaned by passing back and through again. Many flues are not perfectly straight, but as any part of them within the machine is held central in line the projecting ends are at liberty to swing.

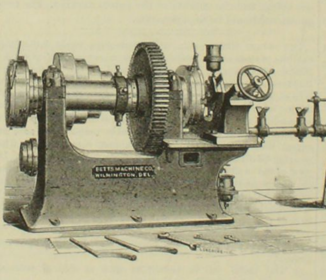
The entrance tube is provided with a set of collars with different sized holes to be inserted alternately, to suit the different diameters of flues which should be entered in a straight line to prevent cutters from being broken.

This machine is strong in all its parts and will stand the hard work it is designed to do; the shafts are protected from dirt and dust with bronze bushings, that can be replaced; the cutters are of best tool steel, and are made in duplicates, which can be furnished when desired. The platform of frame is shaped like a saddle to allow the loose lime to fall off freely. The speed of the machine is optional with user, the pulley can be run as high as 400 revolutions per minute, when about 6 ft. per minute will be cleaned. At 80 revolutions it feeds and cleans on two inch tubes 2 feet per minute.

Manufactured by Pedrick & Ayer, proprietors of the L. B. Flanders Machine Works, Philadelphia, Pa.

MR W. R. ELLIS, the New York and Boston Agent for the Patent Shaft & Axletree Co., of Wednesbury, England, recently delivered to the Allison Mfg. Co., of Philadelphia, 400 wheels with wrought-iron spoke centers and steel tires. These wheels are all fitted to steel axles, and are for cars that are being built for the government of the Argentine Republic. While the above named company were filling this order for wheels, they had on their books the following orders: From Brown, Marshall & Co., of Birmingham, for channel, angle and T iron, wrought-iron spoke wheels and steel axles, for 1,400 cars for the Western Railway of Buenos Ayres; from the Argentine Republic for 1,000 pairs of wheels and axles for Central Northern Railway; 510 pairs wheels and axles for Santiago and Valparaiso Railway; and had just completed orders from the same government for upward of 6,000 wheels and axles, mostly for freight service, the South American railroads preferring wrought-iron wheels to cast-iron, even when used under rolling stock of American patterns.

THE Huyett & Smith Mfg. Co., Detroit, have just sold one of their largest fans to go into the planing mill of William Holt's Sons, of New York. They have recently made large shipments to Berry, Place & Co., of San Francisco, and also to Park & Lacy, of Portland, Oregon. Wood-working shops of all kinds find the fans particularly useful. The Paine Lumber Co., Oshkosh, Wis., are putting several of these fans into their new mill, and the piping is now being completed by the Smith Company In this work they are very particular, aiming to make the piping as perfect in its way as the fans themselves. The Paine Lumber Co. had several of the Smith fans in their old mill which was burned, and the manufacturers naturally feel gratified at receiving a second order from the same parties. There are, in addition to these fans, nine others of large size going into mills in Oshkosh. The Peninsular Car Works are intending to put a number of the exhaust fans into their new works at Detroit. These exhausters appear to be capable of handling anything that can be moved by an air current, from shavings and grain to tanbark or cotton, and in the South many of them are being put in or the purpose of handling cotton.


BETTS MACHINE CO.
WILMINGTON, DEL.

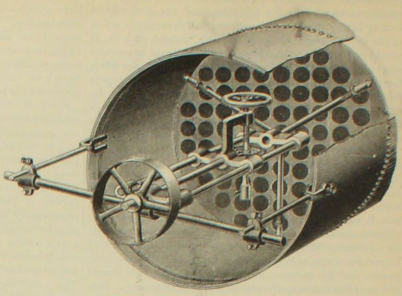
SIX-INCH CUTTING-OFF MACHINE.

The ordinary mode of cutting off stock of iron, steel and other metals, consists of three operations, viz. : heating, cutting with chisels, and finishing the ends afterwards. Either of these operations is as expensive as to cut off by a machine which performs the work all at once. When it is remembered that cutting off constitutes a large portion of the blacksmith work of a machine shop, the great saving by a machine that will do the work to such an advantage is evident.

Much ingenuity and thought have been expended upon this class of tools within the last few years, and to show how thoroughly they are appreciated it is only necessary to point to the large number now in use ; in fact, nearly all large railway and machine shops are supplied with them. Unskilled workmen can easily operate these machines. The tools require no dressing, and any one with a little practice can learn to grind them.

The machine shown in the engraving will cut up to 6 inches in diameter, and has lately been brought out by the Betts Machine Co., of Wilmington, Del., who already have three smaller sizes in use in all parts of the country. It is powerfully geared, has a hollow spindle with concentric chuck on each end of it, so as to get a firm grip on the bar ; and a special tool clamp having an adjustment to alter the angle of the cutting edge of the tool which was designed by the makers of this machine. The feed is, of course, automatic and adjustable. Gauge rods, for cutting to length, and catch castings for the pieces cut off, are furnished.

This sized machine is already in use by the Baltimore & Ohio and Philadelphia & Reading railroads, the Toronto Bridge Co., and Cambria Iron Co.



RIEPPEL'S DRILLING MACHINE.

This machine is designed for drilling all the holes in smoke boxes and cylinder flanges necessary to hang one pair cylinders at one setting of the machine ; it can be driven by hand or belt power, the latter being preferable for rapid work. It consists of an adjustable triangular spider at one end, so arranged that by screwing on or off the pointed ends, that the centre of the machine is central with smoke box ; this spider supports one end of the machine, the other being supported by a cross-head held in position by dogs that clamp firmly to outer edge of smoke box ; on this cross-head sliding pieces are arranged to slip to or from center for different diameters ; these sliding pieces have holes in them to hold the dogs, and allow for different lengths of smoke boxes. The drilling head slides on two parallel rods, on which it can be shifted for any hole to be drilled ; these rods are in line with center of smoke box ; between them is the driving shaft, having a bevel gear wheel fastened to it to drive spindle of the drill ; the other end passes through the hub of driving pulley, having a key in it working into a spline of the shaft, the drilling head also swings on a bearing, central between the two parallel rods. It requires very little time to set the machine, and when once set, all the holes can be drilled and reamed parallel and concentric ; it need not be stopped to shift from one hole to another, as the shifting is done by sliding the drilling head in or out and swinging from one side to the other. The machine is strong and will carry a 1⅜ drill without any difficulty; the shank is reamed to take Morse Twist Drill Taper Shanks, into which a reamer shank is fitted. After the cylinders are in position, an expert man with helper can set the machine, drill and ream all the holes in from 4 to 5 hours. This is one of the most useful machines for railway repair shop, and will soon pay for itself ; where used, it has reduced the cost of such work more than 33 per cent.

Manufactured by Pedrick & Ayer, proprietors of the Flanders Machine Works, Philadelphia, Pa.

THE Detroit Steel and Spring Works have appointed Mr. Geo. H. Ismon, of Chicago, as their agent to represent them in the North and West. Mr. Ismon was formerly with the Crescent Steel Works of Pittsburg.

THE Elastic Packing Manufacturing Co., of Jersey City, N. J., are making a journal-box packing composed of cocoanut fiber and jute. These materials are subjected to a cleansing treatment, so that the fibers consist of mere empty tubes through which the oil is drawn by capillary attraction. The resilient cocoanut fiber holds up the jute, which absorbs the oil and carries it without the aid of springs. The mixture of the two materials is rendered sufficiently non-inflammable to prevent spontaneous combustion or liability to take fire from sparks. Nine pounds of the compound, either before or after saturation with oil, occupies the room of 15 pounds of wool or cotton waste.

THE H. W. Johns Manufacturing Co., of New York, have issued a handsomely illustrated pamphlet in advocacy of the merits of the Asbestos Liquid Paints of their manufacture, which are now extensively used in the decoration of hotels, cottages, railway structures, etc. The nature and quality of the paints, and the improvements made in the processes of utilizing asbestos in the way of structural decoration, are fully set forth. The office of the company is at 87 Maiden Lane, New York.

Ealy's Blue Book.—The July, or semi-annual edition for 1884 has just been issued, and contains a classified list of over 160,000 names of manufacturers and dealers in hardware, iron, machinery, etc. The bank collection department of the publishers, "The John W. Ealy Co.," is in the nature of a clearing house for all past due claims, the operation of which brings a strong influence to bear upon the debtor, and in most cases payment is promptly made.

Mr. Chas. D'W. Gibson, until lately President of the Cliff & Righter Co., and now President of the Marden Car Brake Co., has been appointed General Agent for Messrs. A. French & Co., of Pittsburgh.

The best Railroad Managers and Car Builders are realizing more than formerly the economy of thoroughly painting Freight Cars, and that the first appearance is not all that is required; also, that cheap ready-made paints and imperfectly (hand) mixed paints are as a rule not durable, hence not economical.

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PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD CO., S. A. Hodgman, Superintendent of Motive Power, Wilmington, Del.
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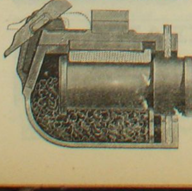

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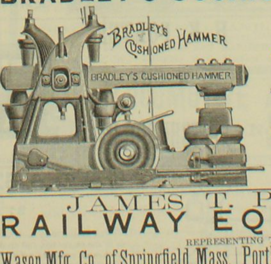

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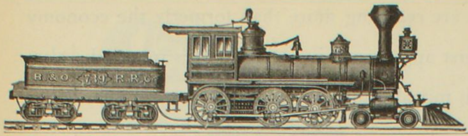

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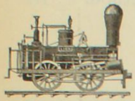

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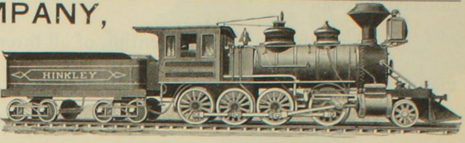

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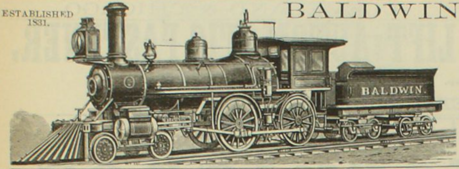

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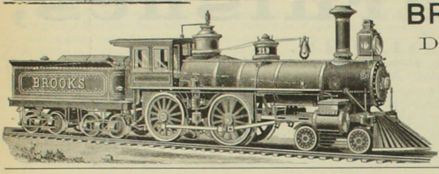

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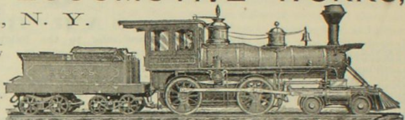

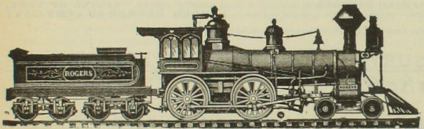

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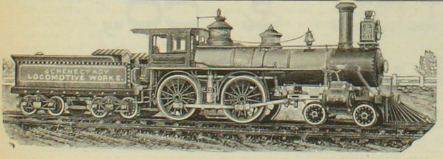

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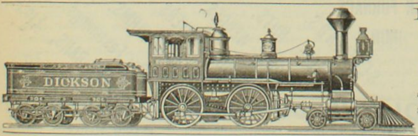

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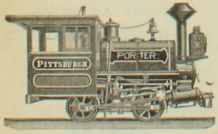

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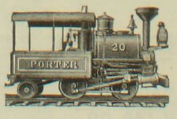

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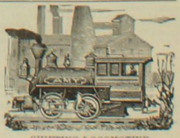

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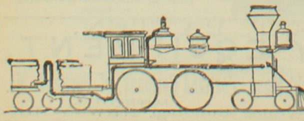

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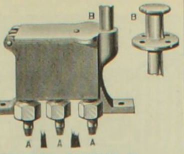

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Particular attention is called to the *elasticity* of our *Packing*, which causes it to *hold up* to the journal and prevents it from sagging when saturated with oil, thus proving it *superior* to any *Packing* ever introduced.

THE ELASTIC PACKING MFG. CO.,
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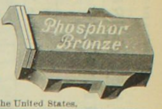
PHOSPHOR-BRONZE,

For Bearings of Locomotives, Cars and Machinery,
SLIDE VALVES, CYLINDER RINGS AND STEAM CONNECTIONS.
SAVES OIL AND REPAIRS, PREVENTS DELAY TO TRAINS, AND NEVER CUTS THE JOURNALS.



Pamphlets and particulars on application to
THE PHOSPHOR-BRONZE SMELTING CO., Limited,
Office, 512 Arch Street, Philadelphia, Pa.
Owners of the United States Phosphor-Bronze Patents. Sole Manufacturers of Phosphor-Bronze in the United States.

THE HENRY-BELL PAINT REMOVER!

FULLY TESTED.

Time, Money and Danger Saved to Railroads and Coach Painters.

For removing old Paint or Varnish from Woodwork, Iron, Glass, etc., *without the use of Fire, Hot Irons, or Scrapers.* Does its work *neat, cheap and rapid. Does not raise the grain of the wood or injure the fabric operated upon. Does its work in less than an hour, 60 minutes.* Can be repainted at once as nicely and effectually as when originally primed. Does away with the use of *Fire, Hot Irons or Scrapers.* Does not injure the workman. Applied with an ordinary paint brush upon any surface which can be painted. Will not run. After old paint is softened it is easily removed by water. One gallon of compound will remove all the paint or varnish on a square (10 × 10 feet). Price list sent on application. Reasonable discount to the trade. Orders, correspondence and tests solicited. Manufactured and sold only by

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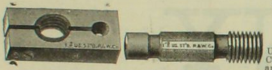

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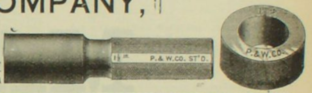
Machine or Nut Taps, Hand and Stay-Bolt Taps; Gauges for the Franklin Institute or U. S. Standard System of Screw Threads, adopted by the Master Mechanics' and Master Car-Builders' Associations; also Plain, Cylindrical Size Gauges, Hardened and Ground and Warranted Standard.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P.&W.CO.

DAMASCUS BRONZE,

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We would call the attention of Master Mechanics and Master Car-Builders to our

PEERLESS BEARING METAL,

Claiming it to have more Anti-Friction qualities and to be more durable than any Bronze or Brass on the Market.

The Metal is for Sale Either in Ingot or Castings.

DAMASCUS BRONZE COMPANY, PITTSBURGH, PA.

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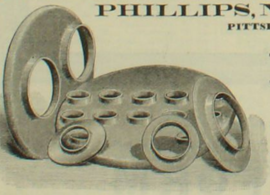

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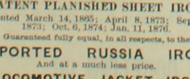

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IMPORTED RUSSIA IRON,
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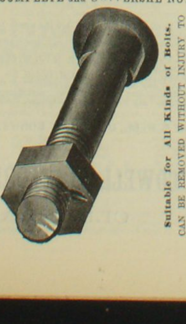

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CAN BE REMOVED WITHOUT INJURY TO EITHER BOLT OR NUT.
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I will Remove and Prevent Scale in any Steam Boiler, or make no charge. My Remedy will also Neutralize the most destructive waters, and prevent

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Which causes so many Boiler Explosions.

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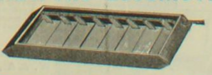

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Easily attached to any Locomotive, guaranteed to save over Four and One-half Tons of Coal in every Thousand Miles run. No burning of Grate Bars. No carting awav of Cinders. No risk to Human Life.

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BERRY BROTHERS, DETROIT, MICH., MANUFACTURERS OF RAILWAY VARNISHES.

ESTABLISHED IN 1855.

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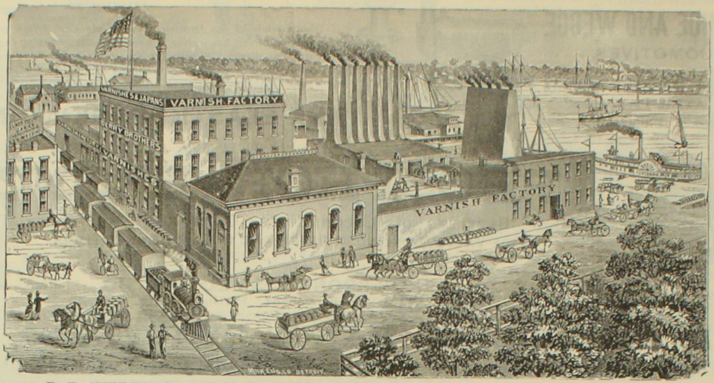

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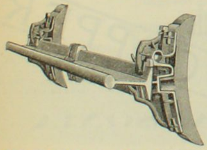

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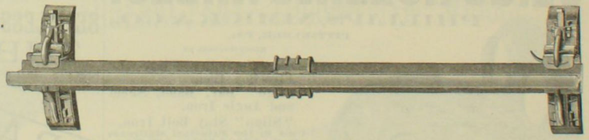
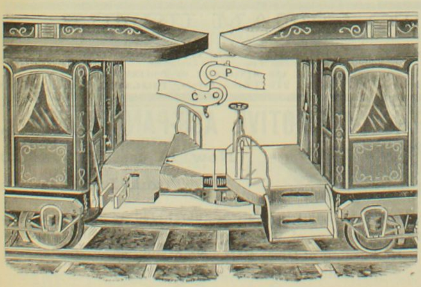
Malleable Iron Head
To Fit any Shoe.
Security.
Durability.
Economy.



ROOM 3, SEARS BUILDING, - - - - BOSTON, MASS.

THE COWELL PLATFORM

Is the only device forming **A CONTINUOUS FLOOR** between cars in motion, and **PREVENTING JERKING** in starting and stopping trains.



THE COWELL COUPLING

Is an Improvement on the Miller and Works with it.

"Entire Satisfaction"—"Perfect Satisfaction" are the words used by R. F. Smith, Gen'l Manager Cleveland & Pittsburgh R. R.; Hiram Fowler, Supt. Connecticut Valley R. R.; J. W. Thomas, Gen'l Supt. Nashville, Chattanooga & St. Louis Ry.; J. G. Sawyer, Master Car-Builder same road, and many others.

"The most practical and perfect device in use"—S. L. Bell, an old Conductor Western & Atlantic R. R.; G. R. Carr, Gen'l Sup't Columbus, Hocking Valley & Toledo R. R.; J. W. Babcock, for years conductor N. Y., Pa. & Ohio Ry.; Gen P. Pease, of Ohio Central Railway.

"Saving much annoyance to passengers"—Chas. B. Couch, Div. Sup't Lake Shore & M. S. Ry., and others.

"A great improvement over any other device I have seen"—J. H. Tinney, Sup't N. Y. & Greenwood Lake Railway.

"It prevents jerking in starting and stopping trains," say Messrs. Babcock, Bell, Couch, Thomas, Tinney and others.

"A great saving to railroads," say Messrs. Smith, Thomas, Tinney, Fowler, Bell, Babcock, and others.

Refer to the Flint & P. M., Utica I. & Elmira, Cin. Southern, C., N. O. & T. Pacific, W. & A., etc., etc.

THE COWELL PLATFORM & COUPLING CO.,

CLEVELAND, O.

DIRECTORY

of the Railroads of the United States and Canada, showing the gauge, length of road, number of locomotives and number of cars; and giving the names and titles of their principal officers in charge of the operating, purchasing and rolling stock departments.

A

Adirondack R. R. 4-8½ gauge 60 m. 3 lo. 62 cars.
C. E. Durkee, *Supt*............Saratoga, N. Y.
Jacob Myers, *M. M*............Saratoga, N. Y.
Jas. J. Traver, *M. C. B*.........Saratoga, N. Y.
Addison & Northern Penn'a Ry. 3 g. 46 m. 5 lo. 50 c.
F. M. Baker, *Gen. Supt*..........Addison, N. Y.
Alabama Great So'n R. R. *(See Cin., N. O. & T. P.)*
Albany & Susquehanna R. R. *(See D. & H. Canal Co.)*
Albemarle & Raleigh R. R. 4-8½ g. 33 m. 3 lo. 35 c.
Jas. H. Petty, *Gen. Supt*.......Tarboro, N. C.
Albert Ry. 4-8½ g. 51 m. 3 lo. 35 cars.
G. A. Robinson, *Man. & Pur. Agt*. Hillsboro, N. B.
Jas. McKay, *M. M. & C. B*......Hillsboro, N. B.
Alexandria & Fredericksburg Ry. } *See Penna. R. R.;*
Alexandria & Washington R. R. } *(7) Div.*
Allegheny Valley R. R. 4-9 g. 259 m. 70 lo. 2202 c.
David McCargo, *Gen. Supt. & Pur. Agt.;* and
C. B. Price, *Supt.* (Riv. Div.).....Pittsburg, Pa.
A. A. Jackson, *Supt.* (L. G. Div.).Reynoldsville, Pa.
W. A. Wood, *M. M*..............Verona, Pa.
R. Gunning, *M. C. B*...........Verona, Pa.
Alliance, Niles & Ashtabula R. R. *(See Penna. Co.)*
Annapolis & Elk Ridge R. R. 4-8½ g. 20 m. 4 lo. 29 c.
W. H. Bians, *Supt. & Pur. Agt*..Annapolis, Md.
John L. Beall, *M. Mach*.........Annapolis, Md.
Antwerp & Paulding R. R. 4-8½ g. 6 m. 4 lo. 63 c.
E. C. Munson, *Gen. Man*.........Antwerp, O.
William Fitzsimmons, Jr., *Pur. Agt*. Antwerp, O.
Arizona & New Mexico Ry. 3 g. 71 m. 3 l. 60 cars.
W. H. Jones, *Gen. Supt. & P. A*. Lordsburg, N. M.
W. C. Boylan, *M. M. & M. C. B*. Lordsburg, N. M.
Arkansas Midland R. R. 3-6 g. 63 m. 4 lo. 45 cars.
A. H. Johnson, *Pr. & Gen. Man*...Helena, Ark.
J. B. Johnson, *M. M. & M. C. B*...Helena, Ark.
Asheville & Spartanburg R. R. 5 g. 49 m. 2 lo. 12 c.
Jas. Anderson, *Supt. & Pur. Agt*. Spart'b'g, S. C.
M. M............Spartanburg, S. C
W. B. Brown, *M. C. B*........Spartanburg, S. C.
Ashland Coal & Iron Ry. 4-8½ g. 22 m. 7 lo. 432 c.
Douglas Putnam, Jr., *Gen. Supt*. Ashland, Ky.
Robt. Peebles, *Pur. Agt*..........Ashland, Ky.
E. M. Roberts, *M. M*.............Ashland, Ky.
Ashtabula & Pittsburgh Ry. *(See Penna. Co.)*
Atchison, Topeka & Santa Fé R. R.
4-8½ g. 2,620 m. 348 lo. 9,629 cars.
A. A. Robinson, *Gen. Man*.......Topeka, Kan.
Geo. B. Harris, *Asst. Gen. Man*...Topeka, Kan.
Geo. Hackney, *Supt. Mach*........Topeka, Kan.
Clem. Hackney, *Asst. Sup. Mach. Dept*. do.
Geo. Hargraves, *Pur. Agt*........Topeka, Kan.
Eastern Div.: D. J. Chase, *Supt*.....Topeka, Kan.
Henry Hull, *G. F. Car Dept*.....Topeka, Kan.
John Fagan, *M. M*.............Atchison, Kan.
J. M. Smith, *M. M*..........Kansas City, Mo.
Alfred Taylor, *M. M*...........Emporia, Kan.
Mid. Div.: H. R. Nickerson, *Supt*. Nickerson, Kan.
W. Y. Johnson, *M. M*.........Nickerson, Kan.
....................Dodge, Kan.
W. Div.: C. M. Rathburn, *Supt*.....La Junta, Col.
A. C. Stiles, *M. M*..........La Junta, Col.
D. H. Dotterer, *M. M*...........Raton, N. M.
So. Div.: Geo. L. Sands, *Supt*......Las Vegas, N. M.
F. B. Woodruff, *M. M*......Las Vegas, N. M.
J. H. Holman, *M. M*...........Wallace, N. M.
E. Hackett, *M. M*.........San Marcial, N. M.
H. P. Olcott, *M. M*...........Deming, N. M.
Geo. A. Hancock, *M. M*.......El Paso, Tex.
Sonora Div.: 265 m.
L. H. Waugh, *M. M*..........Guaymas, Mex.
Kan. Cy., Law. & So. Kan.
4-8½ g. 399 m. 24 lo. 787 c.
J. L. Barnes, *Supt*..............Lawrence, Kan.
T. D. Volk, *M. M*..............Ottawa, Kan.
Atlanta & West Point R. R. *(See Western of Ala.)*
Atlantic & North Carolina R. R. *(See Midland; N. C.)*
Atlantic, Tenn. & Ohio R. R. *(See Rich. & Dan.; (2) Div.)*
Atlantic & Pacific R. R. 4-8½ g. 575 m.
F. W. Smith, *G. Supt*..........Albuquerque, N. M.
A. G. Thompson, *Pur. Agt*.......St. Louis, Mo.
Geo. Chalender, *Supt. M. P. & M.*, and
Geo. F. Chalender, *A. Supt*. Albuquerque, N. M.
Div. Supt.............Williams, Ariz.
Augusta & Knoxville R. R. *(See Port Royal & Aug.)*
Austin & Northwestern R. R. 3 g. 60 m. 5 lo. 75 c.
J. A. Rhomberg, *Gen. Man*........Austin, Tex.

B

Bachman Valley R. R. *(See Han. Junc., Han. & Gett.)*
Balt. & Delaware Bay R. R. 4-8½ g. 50 m. 2 lo. 13 c.
Fred Gerker, *Gen. M. & P. A.* Chestertown, Md.
Baltimore & Hanover R. R. *(See H. J., H. & G.)*
Baltimore & Ohio R. R.
4-8½ g. 1,612 m. 574 lo. 17,339 cars.
S. Spencer, *2d V. P. & Gen. Man*. Baltimore, Md.
N. S. Hill, *Pur. Agt*..........Baltimore, Md.
Ohio Riv. Div. 4-8½ g. 972 m.
W. M. Clements, *Mast. Trans*. Baltimore, Md.
A. J. Cromwell, *Act. M. of M*.. Baltimore, Md.
Jno. W. Clark, *M. C. B*........Baltimore, Md.
I. N. Kalbaugh, *M. M*..........Baltimore, Md.
Wm. Edwards, *M. M*...Martinsburg, W. Va.
Sam. Houston, *M. M*.......Piedmont, W. Va.
Robert Maxwell, *M. M*.......Cumberland, Md.
S. B. Crawford, *M. M*.........Grafton, W. Va.
Alex. Laird, *M. M*.......Parkersburg, W. Va.
W. B. McClung, *M. M*.....Wheeling, W. Va.
Pitts. Div.: T. M. King, *Gen. Supt*...Pittsburg, Pa.
J. E. Sampsell, *Ast. M. of M*. Connellsville, Pa.
Trans-Ohio Divs.: G. J. Foreacre, *G. Man*. Newark, O.
W. H. Harrison, *Asst. M. of Mach*..Newark, O.
E. L. Weisgerber, *M. M*.............Newark, O.
H. M. Ingler, *M. M*................Bellaire, O.
O. B. Perkins, *M. M*.............Zanesville, O.
Andrew Beckert, *M. M*...........Sandusky, O.
F. J. Gunther, *M. M*.....Chicago Junction, O.
Chi. Div.: *Gen. Supt*...Chicago, Ill.
Benj. Lowther, *M. M*.............Garrett, Ind.
W. H. Wilkinson, *M. M*...........Kingston, Ill.
Baltimore & Philadelphia. 4-8½ g. 20 m. 4 lo. 35 c.
D. Connell, *Supt*..............Wilmington, Del.
Baltimore & Potomac R. R. *(See Penna. R. R.; (7) Div.)*
Bangor & Piscataquis R. R. 4-8½ g. 63 m. 4 lo. 87 cars.
Arthur Brown, *Supt. & Pur. Agt*..Bangor, Me.
C. S. Nason, *M. M*..................Bangor, Me.
J. W. Comins, *M. C. B*............Oldtown, Me.
Bangor & Portland Ry. 4-8½ g. 25 m. 3 lo. 3 c.
C. Miller, *Pres*....................Blairstown, N. J.
Barclay R. R. 4-8½ g. 16 m. 6 l. 200 c.
F. F. Lyon, *Supt*......................Barclay, Pa.
J. A. Hardenburg, *Pur. Agt*..21 Cort. st., N. Y.
Wm. Johnson, *M. M*...................Towanda, Pa.
Batesville & Brinkley R. R. 3 g. 25 m. 2 lo. 34 c.
R. W. Martin, *Pres*..............Little Rock, Ark.
W. J. Thompson, *Gen. Man*..Little Rock, Ark.
E. Summerfield, *Gen. Supt*......Brinkley, Ark.
R. B. Davis, *Pur. Agt*...........Brinkley, Ark.
John White, *M. M*...............Brinkley, Ark.
Baton Rouge, Grosse Tête & Opelousas R. R.
5-6 g. 29 m. 3 lo. 12 c.
D. C. Montan, *Gen. Supt*.........Port Allen, La.
Bedford & Bloomfield Ry. 3 g. 43 m. 5 lo. 65 cars.
Jas. W. Kennedy, *Gen. Supt. & Pur. Agt.;* and
Capt. Geo. Elliott, *M. M*...........Bedford, Ind.
Richard G. Elliott, *M. C. B*.......Bedford, Ind.
Bellaire, Zanesville & Cin. Ry. Co. 3 g. 42 m. 5 lo. 71 c.
S. L. Mooney, *Gen. Supt*.........Woodsville, O.
J. B. Hong, *M. M*.....................Bellaire, O.
Bell's Gap R. R. 4-9 g. 23 m. 4 lo. 148 cars.
R. G. Ford, *Supt*..........Bellwood (P. O.), Pa.
Geo. Van Brunt, *M. M*...........Bellwood, Pa.
A. Zimmerman, *M. C. B*..........Bellwood, Pa.
Belt R. R. 4-8½ g. 12 m. 10 lo.
W. P. Ijams, *Supt*................Indianapolis, Ind.
Bennington & Rutland Ry. 4-8½ g. 59 m. 10 lo. 236 c.
F. C. White, *Supt. & Pur. Agt*..Bennington, Vt.
G. W. Blanchard, *M. M*..............Rutland, Vt.
Berlin Branch R. R. *(See Han. Junc., Han. & Gett.)*
Bingham, Canyon & Camp Floyd *(See Den. & Rio Gr.)*
Bladen, Columbus & Florida. 4-8½ g. 16 m. 2 lo. 2 c.
John Colville, *Pres*...........Wilmington, N. C.
Bodie & Benton Ry. 3 g. 34 miles.
Thomas Holt, *Supt. & Pur. Agt*.....Bodie, Cal.
E. H. Barton, *M. M. & C. B*.........Bodie, Cal.

Boston, Barre & Gardner. 4-8½ g. 37 m. 8 lo. 108 c.
H. H. Marshall, *Supt. & P. A*..Worcester, Mass.
Frank I. Goodwin, *M. M*.....Worcester, Mass.
Boston, Concord, Montreal & White Mts. R. R.
4-8½ g. 167 m. 40 lo. 1,116 cars
W. A. Stowell, *Supt*............Plymouth, N. H.
Geo. W. Storer, *Pur. Agt*..........Boston, Mass.
R. Adams, *M. M*.........Lake Village, N. H.
G. A. Ferguson, *Asst. M. M*...Lake Village, N. H.
L. D. Pickering, *M. C. B*....Lake Village, N. H.
Whitefield & Jefferson Div.:
A. L. Brown, *Supt*..........Whitefield, N. H.
Boston, Hoosac Tunnel & W'n Ry.
4-8½ g. 87 m. 18 lo. 1,038 cars.
H. L. Morrill, *Gen. Man*..Mechanicsville, N. Y.
C. H. Cory, *Pur. Agt*.....Mechanicville, N. Y.
C. H. Cory, *Supt. & M. M*..Mechanicville, N. Y.
John S. Ellis, *M. C. B*......Mechanicville, N. Y.
Boston, Revere Beach & Lynn R. R. 3 g. 9 m. 7 lo. 46 c.
C. A. Hammond, *Supt. & P. Agt*. Boston, Mass.
R. D. Sutherland, *M. M*.........Boston, Mass.
John Coghlan, *M. C. B*..........Boston, Mass.
Boston, Winthrop & Point Shirley R. R.
3 g. 10 m. 1 lo. 8 c.
C. A. Parks, *Supt*...............Boston, Mass.
J. W. Davis, *M. M*.............Winthrop, Mass.
Boston & Albany R. R. 4-8½ g. 372 m. 245 lo. 6,111 c.
W. H. Barnes, *Gen. Supt*..........Boston, Mass.
E. Gallup, *Asst. Supt*........Springfield, Mass.
A. B. Underhill, *Supt. M. P*...Springfield, Mass.
F. D. Adams, *Gen. M. C. B*.......Allston, Mass.
H. B. Chesley, *Div. Supt*.........Boston, Mass.
G. H. Colby, *Div. M. M*..........Boston, Mass.
C. E. Grover, *Div. Supt*....Springfield, Mass.
H. W. Eddy, *Div. M. M*....Springfield, Mass.
J. B. Weston, *For. Car Sh*. Springfield, Mass.
W. H. Russell, Jr., *Div. Supt*. E. Albany, N. Y.
T. B. Purvis, *Div. M. M*...East Albany, N. Y.
J. E. Doran, *For. Car Sh*..East Albany, N. Y.
Boston & Lowell R. R.
4-8½ g. 140 m. 82 lo. 2,565 cars.
C. S. Mellen, *Supt*..............Boston, Mass.
F. H. Nourse, *Pur. Agt*..........Boston, Mass.
Jas. A. Taylor, *Supt. M. P*....Concord, N. H.
So. Div.: J. F. Crockett, *Supt*.....Boston, Mass.
No. Div.: Geo. E. Todd, Supt.....Concord, N. H.
Wh. Mount Div.: W. A. Stowell, *Supt*. Concord, N. H.
Boston & Maine R. R. 4-8½ g. 206 m. 89 lo. 2,209 c.
J. T. Furber, *Gen. Supt. & P. A*..Boston, Mass.
Geo. J. Fisher, *Pur. Agt*..........Boston, Mass.
Wm. Smith, *M. M*..................Boston, Mass.
D. C. Richardson, *M. C. B*.....Lawrence, Mass.
Boston & N. Y. Air Line R. R. *(See N. Y., N. H. & H.)*
Boston & Providence R. R. 4-8½ g. 67 m. 52 lo. 1,006 c.
A. A. Folsom, *Gen. Supt. & P. A*. Boston, Mass
Geo. Richards, *M. M*............Roxbury, Mass.
Jno. Lightner, *M. C. B*..........Roxbury, Mass.
Bowling Green R. R. 4-8½ g. 6 m. 2 lo. 4 c.
Wm. A. Wiggins, *Gen. Man*. Bowling Green, O.
Wm. A. Wiggins, *Pur. Agt*..Bowling Green, O.
Bradford, Bordell & Kinzua R. R. 3 g. 42 m. 6 lo. 82 c.
Bradford, Eldred & Cuba. 3 g. 54 m. 6 l. 158 c.
Tonawanda Valley & Cuba. 3 g. 60 m. 5 lo. 31 c.
B. C. Williams, *Gen. Man. & P. A*..Brad'fd, Pa.
Jno. Delaney, *M. M. & C. B*......Bradford, Pa.
Brattleboro' & Whitehall R. R. 3 g. 36 m. 3 lo. 56 c.
(Operated by Central Vermont.)
Breakwater & Frankford R. R. *(See Del., Md. & Va.)*
Bridgton & Saco River R. R. 2 g. 16 m. 2 lo. 19 c.
Wm. F. Perry, *Gen. Supt*.......Bridgton, Me.
M. M. Caswell, *M. M. & Pur. Agt*. Bridgton, Me.
Brighthope Ry. 3 g. 37 m. 4 lo. 193 cars.
Jas. R. Worth, *Supt*...............Richmond, Va.
P. M. Buckingham, *Pur. Agt* Richmond, Va.
A. Gary, *Supt. Way & Works*. Winterpock, Va.
Robt. Kredell, *M. M*................Chester, Va.
Brooklyn, Bath & Coney Island R. R.
4-8½ g. 7 m. 8 lo. 36 cars.
Geo. A. Gunther, *Gen. Man*...Brooklyn, N. Y.
Aug. Wolff, *M. M*..................Brooklyn, N. Y.
Brooklyn, Flatbush & Coney Island Ry.
4-8½ g. 7 m. 7 lo. 54 c.
J. L. Morrow, *Supt. & P. A*...Brooklyn, N. Y.
Wm. Finley, *M. M*...............Brooklyn, N. Y.
Brooklyn & Rockaway Beach R. R.
4-8½ g. 3 m. 2 lo. 18 cars.
Wm. Warner, *Supt*.......East New York, N. Y.
Brunswick & Western R. R. 5 g. 172 m. 13 lo. 170 c
H. S. Morse, *Gen. Man. & P. A*..Brunswick, Ga.
R. J. Evans, *Supt*..................Brunswick, Ga.
W. R. Kline, *M. M*................Brunswick, Ga.
Buff., N. Y. & Phil. R. R. 3 & 4-8½ g. 655 m. 120 l. 6,339 c.
Geo. S. Gatchell, *Gen. Supt*.....Buffalo, N. Y.
W. W. Halsey, *Asst. to G. Supt*..Buffalo, N. Y.
J. H. Poole, *Pur. Agt*.............Buffalo, N. Y.
Allen Vail, *Supt. M. P. & M*.....Buffalo, N. Y.
Buff. Div.: Henry Dwyer, *Supt*.... Buffalo, N. Y.
Roch. Div.: J. W. Watson, *Supt*......Olean, N. Y.
Pitts. Div.: E. H. Witter, *Supt*......Oil City, Pa.
H. J. Bookhammer, *M. M*..........Oil City, Pa.
John Monks, *M. C. B*................Oil City, Pa.
C. E. Turner, *M. M*..................Olean, N. Y.
Burlington, Cedar Rapids & Northern Ry.
4-8½ g. 713 m. 76 lo. 3,006 cars.
C. J. Ives, *Pres*................Cedar Rapids, Ia.
Robt. Williams, *Gen. Supt*....Cedar Rapids, Ia.
T. Stickney, *Pur. Agt*...........Cedar Rapids, Ia.
R. W. Bushnell, *M. M. & C. B*. Cedar Rapids, Ia.
Burlington & Lamoille R. R. 4-8½ g. 35 m. 4 lo. 64 c.
G. L. Linsley, *Gen. Man. & Supt*. Burlington, Vt.
F. G. Brownell, *M. M., M. C. B. & P. A*. do.
Burlington & Mo. Riv. R. R. (in Neb.) *(See C. B & Q.)*
Burlington & North-West'n Ry. 3 g. 38 m. 3 lo. 97 c.
Burlington & Western R. R. 3 g. 15 m. 38 c.
W. B. Jones, *Supt*..................Burlington, Ia.
Burlington & Ohio River R. R. 4-8½ g.
R. Tanner, *Pur. Agt*...................Chicago, Ill.

C

California Northern R. R. 4-8½ g. 26 m. 2 lo. 17 c.
Andrew J. Binney, *Gen. Man*..Marysville, Cal.
California Southern R. R. 4-8½ g. 127 m. 13 lo. 301 c.
J. N. Victor, *Supt*..............National City, Cal.
J. M. Keith, *M. M*..............National City, Cal.
Cambridge & Seaford. *(See Penna. R. R.; (4) Div.)*
Camden Atlantic R. R. *(See Penna. R. R.; (2) Div.)*
Canada Southern Ry. *(See Mich. Cen.; (2) Div.)*
Canada Atlantic Ry. 4-8½ g. 82 m.
D. C. Linsley, *Man*....................Ottawa, Ont.
M. Donaldson, *M. M*..................Ottawa, Ont.
Canadian Pacific R. R. 4-8½ g. 1,742 m. 118 l. 2,726 c.
W. C. Van Horne, *Gen. Man*....Montreal, Que.
T. G. Shaughnessy, *Asst. G. M*. Winnipeg, Man.
T. R. F. Brown, *Mech. Supt*.....Montreal, Que.
T. G. Shaughnessy, *Pur. Agt*....Montreal, Que.
E. Div.: Archer Baker, *Gen. Supt*. Montreal, Can.
Tho. Irwin, *Mech. Supt*.......Brockville, Ont.
W. Div.: J. M. Egan, *Gen. Supt*..Winnipeg, Man.
F. C. Butterfield, *M. M. & M. C. B*. Winnipeg, Man.
Cape F'r & Yadkin Val. R. R. 4-8½ g. 112 m. 7 lo. 60 c.
J. S. Morrison, *Gen. Supt*....Fayetteville, N. C.
Isaac W. Clark, *M. M. & C. B*..Fayetteville, N. C.
Cape Girardeau Southwestern Ry.
4-8½ g. 33 m. 3 lo. 20 cars.
Louis Houck, *Gen. Man*..Cape Girardeau, Mo.
W. A. Penney, *Gen. Supt*..Cape Girardeau, Mo.
W. H. Wheeler, *Pur. Agt*. Cape Girardeau, Mo.
Fred Glover, *M. M*.........Cape Girardeau, Mo.
Carolina Central R. R. *(See Ral. & Aug.)*
Carson & Colorado R. R. *(See Va. & Truckee).*
Catasauqua & Fogelsville. 4-8½ g. 25 m. 6 lo. 581 c.
C. W. Chapman, *Supt. & P. A*. Catasauqua, Pa.
J. Thomas, *M. M*..............Hokendauqua, Pa.
Chas. J. Holbach, *M. C. B*.....Catasauqua, Pa.
Catskill Mountain R. R. 3 g. 16 m. 2 lo. 26 cars.
Charles A. Beach, *Supt*.........Catskill, N. Y.
Cazenovia, Canastota & De Ruyter. *(See U., I. & E.)*
Central and South-Western Railroads (Ga.).
5 g. 1,115 m. 145 lo. 2,008 cars.
W. G. Raoul, *Pres*....................Savannah, Ga.
Wm. Rogers, *Gen. Supt*..............Savannah, Ga.
C. H. Carson, *Pur. Agt*..............Savannah, Ga.
Cen. Div.: D. D. Arden, *M. M*......Savannah, Ga.
T. F. Warwick, *M. M*..............Augusta, Ga.
F. Devine, *M. C. B*.................Savannah, Ga.
So.-West'n Div.: T. D. Kline, *Supt*.....Macon, Ga.
D. M. Gugel, *M. M*......................Macon, Ga.
James A. Knight, *M. C. B*...........Macon, Ga.
Central R. R. of N. J. *(See Phil. & Read.; N. J. Cen. Div.)*
Central R. R. of S. C. *(See Wil. & Wel.)*
Central American & Pacific Ry. 3 g. 67 m. 1 lo. 11 c
W. C. Fitzsimmons, *Gen. Supt*..Escuintla, Guat.
Central Branch Union Pac. *(See Mo. Pac.; (3) Div.)*
Central Iowa Ry. 4-8½ g. 412 m. 50 lo. 1,959 cars.
E. L. Dudley, *Supt*...........Marshalltown, Ia.
J. G. Johnston, *Asst. Supt*....Marshalltown, Ia.
D. D. Phelps, *Asst. Supt*........Monmouth, Ill.
W. R. Coppock, *Asst. Pur. Agt*. Marshalltown, Ia.
John Player, *M. M*............Marshalltown, Ia.
T. L. Seevers, *M. C. B*.......Marshalltown, Ia.
Central Ontario Ry. 4-8½ g. 33 m. 4 lo. 66 cars.
G. W. McMullen, *Gen. Man*........Picton, Ont.
James Falconar, *M. M*...........Trenton, Ont.
Central Pac. R. R. 4-8½ g. 4,303 m. 382 lo. 11,260 c.
A. N. Towne, *Gen. Man*....San Francisco, Cal.
J. A. Fillmore, *Gen. Supt*...San Francisco, Cal.
R. H. Pratt, *A. G. Supt*....San Francisco, Cal.
J. R. Watson, *Gen. Pur. Agt*..Sacramento, Cal.
A. J. Stevens, *Gen. M. M*.....Sacramento, Cal.
W. McKenzie, *Asst. G. M. M*..Sacramento, Cal.
Benj. Welch, *Gen. M. C. B*....Sacramento, Cal.
G. J. Turner, *Asst. G. M. C. B*. Sacramento, Cal.
Western; Visalia & Tulare Divs. and Northern Ry.
A. D. Wilder, *Supt*..........W. Oakland, Cal.
G. D. Welch, *M. M.* (W. Div.). W. Oakland, Cal.
W. B. Ludlow, *M. C. B.* (W. Div.) do.
S. Johnson, *M. M.* (T. Div.).......Tulare, Cal.
D. Rutherford, *M. M.* (N. Rd.). S. Vallejo, Cal.
Sacramento; Oregon Divs.; and Cal. Pac. R. R.
J. B. Wright, *Supt*...........Sacramento, Cal.
M. W. Cooley, *M. M.* (*S. Div.*) Sacramento, Cal.
Truckee Div.: J. H. Whited, *Supt*. Wadsworth, Nev.
Geo. Gregg, *M. M*........Wadsworth, Nev.
Wm. McPherson, *F. Car Sh*..Wadsworth, Nev.
Humb't Div.: G. W. Coddington, *Supt*. Carlin, Nev.
W. F. Smith, *M. M*..............Carlin, Nev.
J. C. Doughty, *For. Car Sh*......Carlin, Nev.
Salt Lake Div.: A. G. Fell, *Supt*.....Ogden, Utah.
James Lamb, *M. M*.............Terrace, Utah.
A. Sherburne, *For. Car Sh*......Ogden, Utah.
Colorado Div.: C. B. Seymour, *Supt*. Needles, Cal.
St. & Cop. R. R.: R. L. Myrick, *Supt*..Stockton, Cal.
Los Angeles; and Yuma Divs. (So. Pac.):
E. E. Hewitt, *Asst. Supt*....Los Angeles, Cal.
James Velsir, *M. M*..........Los Angeles, Cal.
T. T. Gilleland, *For. Car Sh*. Los Angeles, Cal.
Arizona Divs. (So. Pac.):
J. A. Muir, *Asst. Supt*..........Tucson, Ariz.
W. F. Smith, *M. M*..............Tucson, Ariz.
Rio Grande (S. Pac.) & El Paso (G. H. & S. A.) Divs.:
J. Campbell, *Supt*...............El Paso, Texas.
J. L. Bonner, *M. M*.............El Paso, Texas.
H. C. Standish, *For. Sh*.....El Paso, Texas.
Galveston, Harrisburg & San Antonio System.
E. G. Thompson, *Supt*...........Houston, Tex.
San Anto. Div.: W. G. Van Vleck, *Supt.*, and
J. J. Ryan, *M. M*...........San Antonio, Tex.
D. T. Davis, *Supt. Car Shops*. Harrisburg, Tex.
Louisiana Div.: W. Irwin, *Supt*.....Houston, Tex.
D. C. Smith, *M. M*...............Houston, Tex.
El Paso Div.: Jas. Campbell, *Supt*..El Paso, Tex.
J. L. Bonner, *M. M*...............El Paso, Tex.
Central Texas & N'w'n R. R. *(See Hous. & Tex. Cen.)*
Central Vermont R. R. 4-8½ g. 673 m. 136 lo. 2,789 c.
J. W. Hobart, *Gen. Man*.........St. Albans, Vt.
J. M. Foss, *Asst. Gen. Supt. & M. M*. St. Albans, Vt
No. Div.: I. B. Futvoye, *Supt*.....St. Johns, P. Q.
Rut. Div.: J. Burdett, *Supt*..........Rutland, Vt.
N. L. Davis, *M. M. & C. B*....... Rutland, Vt.
Brattleboro & Whitehall R. R., and
Brat. Div.: E. F. Brooks, *Supt*...Brattleboro, Vt.
New London No'n R. R. 143 m. 22 lo. 303 c.
C. F. Spaulding, *Supt. & P. A*. New London, Ct.
I. W. Dow, *M. M*...............New London, Ct.
S. O. Banks, *M. C. B*...........New London, Ct.
Chagrin Falls & Southern R. R. 3 g. 6 m. 1 lo. 12 c.
W. Hutchings, *Gen. Man*......Chagrin Falls, O.
J. W. Williams, *Gen. Supt*....Chagrin Falls, O.
Charleston & Savannah Ry. 5 g. 115 m. 17 lo. 190 c.
H. S. Haines, *Gen. Man*......... Savannah, Ga.
C. S. Gadsden, *Gen. Supt*......Charleston, S. C.
H. A. Ulmo, *M. M*................ Savannah, Ga
Charlotte, Columbia & Augusta R. R. *(See Rich. & D.)*
Chateaugay R. R. 3 g. 34 m. 7 lo. 365 cars.
A. L. Inman, *Gen. Man*..... Plattsburg, N. Y.
J. M. Davies, *Supt*.......Lyon Mountain, N. Y.
M. L. French, *Asst. Supt*.... Plattsburg, N. Y.
Chattaroi Ry. 4-8½ g. 51 miles 11 loco. 483 cars.
F. H. Oliphant, *Gen. Man. & P. A*. Ashland, Ky.
J. R. Martin, *M. M*................. Ashland, Ky.
Joseph P. Burleigh, *M. C. B*...... Ashland, Ky.
Cheraw & Chester R. R. *(See Rich. & Dan.; (2) Div.)*
Cheraw & Darlington R. R. *(See Wil. & Wel.)*
Cheraw & Salisbury R. R. *(See Wil. & Wel.)*
Cherokee R. R. *(See East & West.)*
Cherry Valley R. R. 4-8½ g. 6 m. 3 lo. 6 cars.
E. T. Herndon, *Supt*...............Midland, Mo.
Chesapeake, Ohio & South-Western.
4-9 g. 398 m. 62 lo. 1,345 c.
Gen. Supt........Louisville, Ky.
H. E. Huntington, *Pur. Agt*.....Louisville, Ky.
J. E. Reeves, *Supt. Trans*......Louisville, Ky.
R. H. Briggs, *Supt. M. P*..........Paducah, Ky.
D. L. Weaver, *M. M*.......Elizabethtown, Ky.
Jno. Fitzgerald, *M. M*..............Paducah, Ky.
Chesapeake & Ohio Ry. 4-8½ g. 642 m. 169 l. 5,120 c.
C. W. Smith, *Gen. Man*..........Richmond, Va.
D. A. Sweet, *Asst. to Gen. Man*. Richmond, Va.
A. S. Emmons, *Pur. Agt*.........Richmond, Va.
T. L. Chapman, *Supt. M. P*......Richmond, Va.
Eastern Div.: A. H. Wood, *Supt*..Richmond, Va.
J. N. King, *M. C. B*...............Richmond, Va.
J. B. Pierce, *M. M*.................Richmond, Va.
Hunt. Div.: W. B. Ryder, *Supt*....Hinton, W. Va.
W. H. Thomas, *M. M*..Huntington, W. Va.
H. C. Bassinger, *M. C. B*. Huntington, W. Va.
Lex. Div.: J. D. Yarrington, *Supt*..Lexington, Ky.
S. R. Tuggle, *M. M*.............Lexington, Ky.
K. C. Div.: G. W. Bender, *Supt*..Lexington, Ky.
A. H. Watts, *M. M*...............Lexington, Ky.
Cheshire R. R. 4-8½ g. 80 m. 31 lo. 531 cars.
R. Stewart, *Gen. Man*...............Keene, N. H.
H. H. Stone, *Pur. Agt*..............Keene, N. H.
F. A. Perry, *M. M*....................Keene, N. H.
A. E. Howard, *M. C. B*..............Keene, N. H.
Chester & Lenoir Ry. *(See Rich. & Dan.; (3) Div.)*
Chicago, Bur. & Kan. City Ry. *(See C. B. & Q.)*
Chicago, Burlington & Quincy R. R.
4-8½ g. 3,608 m. 545 lo. 21,012 cars.
T. J. Potter, *Gen. Man*............. Chicago, Ill.
(1) C., B. & Q., East of Mo. Riv.
H. B. Stone, *Asst. Gen. Man*........ Chicago, Ill.
Wm. Irving, *Gen. Pur. Agt*........Chicago, Ill.
G. W. Rhodes, *Supt. M. P*...........Aurora, Ill.
Wm. Forsyth, *Mech. Eng*............Aurora, Ill.
Ill. Divs.: J. D. Besler, *Supt*........Galesburg, Ill.
Chi. Div.: Geo. Alexander, *Supt*.......Aurora, Ill.
L. E. Johnson, *M. M*....................Aurora, Ill.
Galesburg Div.: F. C. Rice, *Supt*. Galesburg, Ill.
Robert Colville, *M. M*.......... Galesburg, Ill.
St. L. Div.: S. E. Crance, *Supt*..Beardstown, Ill.
A. Forsyth, *M. M*..................Beardstown, Ill.
Ia. & Mo. Divs.: W. F. Merrill, *Supt*. Burlington, Ia.
East. Div.: O. E. Stewart, *Supt*..Burlington, Ia.
Joel West, *M. M*..................Burlington, Ia.
Mid. Div.: J. B. Maxon, *Supt*.....Ottumwa, Ia.
West'n Div.: J. H. Duggin, *Supt*....Creston, Ia.
C. W. Eckerson, *M. M*.............Creston, Ia.
Chi., B. & Kan. C'y and St. L., Keo. & No.-W'n Rys.
Robt. Law, *Gen. Supt*....................Keokuk, Ia.
W. H. Bartlett, *M. M*..............Burlington, Ia.
(2) C. B. & Q., West of Mo. Riv.
G. W. Holdrege, *Asst. Gen. Man*. Omaha, Neb.
C. M. Wead, *Supply Agt*............Omaha, Neb.
D. Hawksworth, *M. M*.........Plattsmouth, Neb.
Bur. & Mo. Riv. & Neb. Ry. Divs.:
T. E. Calvert, *Gen. Supt*..........Lincoln, Neb.
D. E. Thompson, *Supt*..............Lincoln, Neb.
E. Bignell, *M. M*.......................Lincoln, Neb.
R. V. Div.: A. Campbell, *Supt*......McCook, Neb.
A. & N. Div.: J. McConniff, *Supt*...Lincoln, Neb.
Chicago, Fairchild & Eau Claire R. R.
4-8½ g. 20 m. 3 lo. 28 cars.
N. C. Foster, *Gen. Man*...........Fairchild, Wis.
C. I. Wickersham, *Pur. Agt*.........Chicago, Ill.
Chicago, Milwaukee & St. Paul R. R.
4-8½ g. 5,201 m. 626 lo. 19,018 cars.
S. S. Merrill, *Gen. Man*.........Milwaukee, Wis.
R. Miller, *Asst. Gen. Man*..... Milwaukee, Wis.
J. T. Clark, *Gen. Supt*...........Milwaukee, Wis.
A. J. Earling, *Asst. Gen. Supt*. Wilwaukee, Wis.
J. T. Crocker, *Pur. Agt*.........Milwaukee, Wis.
J. M. Lowry, *Gen. M. M*........Milwaukee, Wis.
E. Fairbairn, *M. M*..............Milwaukee, Wis.
John Bailie, *Supt. Car Dept*...Milwaukee, Wis.
W. E. Kittridge, *M. C. B*.......Milwaukee, Wis.
(1) *Asst. Gen. Supt*..Milwaukee, Wis.
Chi Div.: Geo. O. Clinton, *Supt*.....Chicago, Ill.
La Crosse Div.: W. G. Collins, *Supt*. Milwaukee, Wis.
C. & C. B Div. in Ill.:
R. B. Campbell, *Supt*..............Marion, Ia.
P. du C. & M. Pt. Divs.:
S. J. Collins, *Supt*..............Milwaukee, Wis
(2) C. H. Prior, *Asst. Gen. Supt*..Minneapolis, Minn.
H. & D. Div.: W. M. Kellie, *Supt* do.
J. O. Pattie, *M. M*.......Minneapolis, Minn.
Ia. & Minn. Div.: H. R. Williams, *Supt*. do.
S. Minn. Div.: F. D. Underwood, *Supt*. Lacrosse, Wis.
Riv. & Dub. Divs.: C. W. Case, *Supt*. Dubuque, Ia.
S. Charnley, *M. M*..............Dubuque, Ia.
Ia. & Da. Div.: G. W. Sanborn, *Supt*. Mason City, Ia.
S. Cy. & Da. Div.: W. J. Underwood, *Supt*. Sioux Cy, Ia.
F. H. Moulton, *M. M*..........Yankton, Dak.
J. M. Horan, *For*..............Yankton, Dak.
(3) D. A. Olin, *Asst. Gen. Supt*..........Racine, Wis.
R. & S. W. Divs.: D. L. Bush, *Supt*...Racine, Wis.
John Taylor, *M. M*..............Racine, Wis
(4) Northern Div.: L. B. Rock, *Supt*. Milwaukee, Wis.
Wm. E. Kittredge, *M. C. B*..Milwaukee, Wis
Chicago, Rock Island & Pac. Ry.
4-8½ g. 1,381 m. 309 lo. 8,367 cars.
R. R. Cable, *Pres. & Gen. Man*....Chicago, Ill.
A. Kimball, *V. P. & Gen. Supt*.....Chicago, Ill.
H. F. Royce, *Asst. G. Supt*......Davenport, Ia.
F. A. Marsh, *Pur. Agt*..............Chicago, Ill.
T. B. Twombly, *Gen. M. M*........Chicago, Ill.
B. K. Verbryck, *Gen. M. C. B*......Chicago, Ill.
Ill. Div.: R. H. Chamberlin, *Supt*.....Chicago, Ill.
R. Biester, *M. M*....................Chicago, Ill.
Sam'l Pullman, *M. C. B*...........Chicago, Ill.
Ia. Divs.: Jno. Given, *Supt*.......Des Moines, Ia.
J. G. Crockett, *M. M*................Stuart, Ia.
Jas. E. Morrill, *M. M*...........Davenport, Ia.
Chas. M. Leonard, *M. C. B*......Davenport, Ia.
K. & Des. M. Div.: Jno. Given, *Supt*..Des Moines, Ia.
S. W. Wakefield, *M. M*............Keokuk, Ia.
Henry Kummer, *M. C. B*..........Keokuk, Ia.
So.-Wn. Div.: G. F. Walker, *Supt*....Trenton, Mo.
R. O. Carscadin, *M. M*...........Trenton, Mo.
Chas. R. Best, *M. C. B*...........Trenton, Mo.
Chicago, Saginaw & Canada R. R. *(See Det., L. & N.)*
Chicago, St. Louis & New Orleans R. R. *(See Ill. Cen.)*
Chicago, St. Louis & Pittsburg R. R.
4-9 g. 635 m. 202 lo. 3,510 cars.
James McCrea, *Manager*..........Columbus, O.
Wm. Mullins, *Gen. Pur. Agt*....Pittsburg, Pa.
Edward B. Wall, *Supt. M. P*....Columbus, O.
1, 3 & 5 Divs.: J. F. Miller, *Supt*. Richmond, Ind.
Robert Curtis, *M. M*............Columbus, O
J. L. Copeland, *G. F Car Shops*. Columbus, O
W. C. Arp, *Gen. For*.......Indianapolis, Ind.
2 & 4 Divs.: Chas. Watts, *Supt*. Logansport, Ind.
W. W. Reynolds, *M. M*.....Logansport, Ind.
Chas. H. Starr, *G. F. C. Shops*, Logansport, Ind.
Chicago, St. Louis & Wn. R. R. 4-8½ g. 88 m. 11 lo. 1,799 c.
F. E. Hinckley, *Gen. Man*.........Chicago, Ill.
A. H. Crocker *Supt*...............Streator, Ill.
J. N. Chilson, *M. C. B*............Streator, Ill.
Chicago, St. Paul, Minneapolis & Omaha Ry.
4-8½ g. 1,280 m. 181 lo. 5,221 cars.
J. M. Whitman, *Gen. Supt*......St. Paul, Minn.
W. H. S. Wright, *Pur. Agt*......St. Paul, Minn.
Matt. Ellis, *M. M*...............St. Paul, Minn.
J. J. Ellis, *Asst. M. M*..........St. Paul, Minn.
H. L. Preston, *M. C. B*............Hudson, Wis.
Ea. & No. Div.: A. A. Hobart, *Supt*. St. Paul, Minn.
St. Paul and Sioux City Div.:
H. Spencer, *Supt*..............St. James, Minn.
H. C. Anderson, *Asst. M. M*.....Sioux Cy, Ia.
Neb. Div.: Jas. McCabe, *Supt*......Omaha, Neb.
Chic., Tex. & Mexican Cent. Ry. *(See Gulf, C. & S. F.)*
Chicago & Alton R. R. 4-8½ g. 849 m. 213 lo. 6,168 c.
C. H. Chappell, *Gen. Man*.........Chicago, Ill.
T. L. Bates, *Supt. of Trans*...Bloomington, Ill.
A. V. Hartwell, *Pur. Agt*...........Chicago, Ill.
Wm. Wilson, *Supt. of Mach*...Bloomington, Ill.
Jos. Townsend, *G. For. Car Dept*. do.
Chi. Div.: A. M. Richards, *Supt*. Bloomington, Ill.
St. L. & K. C Div.: S. D. Reeves, *Supt*. Roodhouse, Ill.
L. H. Miller, *M. M*..................Slater, Mo.
Chicago & Atlantic Ry. 4-8½ g. 269 m.
F. Broughton, *Gen. Man*..........Chicago, Ill.
J. H. Parsons, *Supt*.................Chicago, Ill.
Geo. A. Hill, *M. M. & M. C. B*..Huntington, Ill.
Chi. & East'n Ill. 4-8½ g. 252 m. 56 lo. 3,500 cars.
O. S. Lyford, *Gen. Supt*............Chicago, Ill.
D. R. Patterson, *Pur. Agt*.........Chicago, Ill.
P. W. Drew, *M. Trans*..............Chicago, Ill.
Allen Cooke, *M. M*..................Danville, Ill.
Chicago & Grand Trunk Ry. *(See Grand Trunk.)*
Chicago & Great Southern Ry.
4-8½ g. 124 m. 4 lo. 122 c.
Henry Crawford, *Gen. Man*........Chicago, Ill.
H. Crawford, Jr., *Supt*............Chicago, Ill.
Chicago & Iowa R. R. 4-8½ g. 104 m. 16 lo. 237 cars.
T. J. Potter, *Gen. Man*............Chicago, Ill.
W. H. Holcomb, *Gen. Supt*........Rochelle, Ill.
H. S. Bryan, *M. M*....................Aurora, Ill.
Chicago & Northwestern Ry.
4-8½ g. 3,761 m. 637 lo. 21,000 cars.
Marvin Hughitt, *2d V. Prs. & G. M*. Chicago, Ill.
C. C. Wheeler, *Gen. Supt*..........Chicago, Ill.
W. B. Linsley, *Ass't Gen. Supt*....Chicago, Ill.
R. W. Hamer, *Pur. Agt*..............Chicago, Ill.
Geo. W. Tilton, *Supt. M. P. & M.;* and
Wm. Campbell, *A. Supt. M. P. & M*..Chicago, Ill.
Wis. and Mil. Divs. & Sheboygan & W'n Ry.:
Ed. J. Cuyler, *Supt*..................Chicago, Ill.
Gal. Div.: Chas. Murray, *Supt*....... Chicago, Ill.
Pen'a Div.: W. F. Fitch, *Supt*.....Escanaba, Mich.
J. Symons, *M. M*..................Escanaba, Mich.
Mad. Div.: C. A. Swineford, *Supt*..Baraboo, Wis.
Minn. & Dak. Divs.: S. Sanborn, *Asst. Gen. Supt*.
and W. A. Scott, *M. M*.............Winona, Minn.
Dak. Cen. Ry.: J. S. Oliver, *Supt*....Huron, Dak.
Ia. Div.: H. G. Burt, *Supt*...............Boone, Ia.
Geo. W. Lowe, *M. M*...............Clinton, Ia.
No. Ia. Div.: M. Hopkins, *Supt*...Eagle Grove, Ia.
Win. & St. P. Div.:
W. P. Cosgrave, *Supt*.............Winona, Minn.
Chicago & West Michigan:
4-8½ g. 409 m. 47 lo. 1,629 cars.
J. B. Mulliken, *V. P. & G. Man*. Muskegon, Mich.
A. M. Nichols, *Gen. Supt*......Gd. Rapids, Mich.
Edw. Hill, *Pur. Agt*................Muskegon, Mich.
W. F. N. Davis, *M. M*.............Muskegon, Mich.
Chicago & West'n Ind. R. R. 4-8½ g. 50 m. 12 lo. 150 c.
James Walsh, *Gen. Man*........... Chicago, Ill.
Cincinnati, Columbus & Hocking Val. Ry.
4-9 g. 25 m. 2 lo. 77 cars.
D. P. Hyatt, *Gen Man*......................Dayton, O.
Cin., Georgetown & Portsmouth. 3 g. 35 m. 3 lo. 45 c.
M. Simmons, *Supt*.....................Cincinnati, O.
F. Enler, *M. M*.........................Cincinnati, O.
Cincinnati & Green River Ry. 3 g. 11 m. 2 lo. 41 c.
G. B. Harper, *Supt*........................Grove, Ky.
Geo. W. Lewis, *M. M*......................Grove, Ky
Cin., Hamilton & Dayton R. R. 4-9 g. 352 m. 92 l. 2,932 c.
C. J. Hepburn, *Gen. Supt*.........Cincinnati, O.
John Black, *Gen. M. M*......................Lima, O.
W. H. H. Allison, *M. C. B*...........Cincinnati, O.
Day. & Mich. Div.:
W. F. Stark, *Asst. Supt*..................Toledo, O.
Cincinnati, Indianapolis, St. Louis & Chicago Ry.
4-8½ g. 384 m. 71 lo. 3,279 cars.
J. W. Sherwood, *Supt*...........Indianapolis, Ind.
Geo. Tozzer, *Pur. Agt*...............Cincinnati, O.
J. S. Patterson, *M. of Mach. & M. C. B*. Cinc'nn., O.
Cincinnati, New Orleans & Texas Pacific Ry. Co.
5 g. 846 m. 123 lo. 3,464 cars.
John Scott, *Gen. Man*..................Cincinnati, O
Richard Carroll, *Gen. Supt*.........Cincinnati, O.
R. W. Healey, *Gen. Pur. Agt*.......Cincinnati, O.
James Meehan, *S. M. P. & M*...... Cincinnati, O.
Cin. So. Div.: W. W. Wells, *Supt*..Somerset, Ky.
J. L. Tomlinson, *Asst. S. M. P*.. Ludlow, Ky
John Richardson, *M. C. B*.........Cincinnati, O.
A. Thomson, *M. M*..........Chattanooga, Tenn.
Ala. Gr. S'n Div.: D. McLaren, *Supt.*, and
George Manuell, *M. M*....Chattanooga, Tenn
J. M. Kelly, *M. C. B*.....Chattanooga, Tenn.

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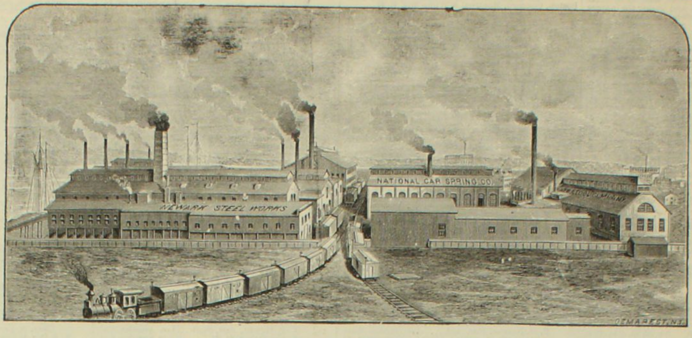
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HOPKINS VERSUS LE ROY!

THE QUESTION.

Does the Le Roy Journal Bearing Company "stand ready" to make what are commonly known as Hopkins Journal Bearings, because of numerous disgusting failures, resulting from the use of the weak, gridiron arrangement known as the Le Roy Bearing heretofore made and sold by them, and the consequent necessity of going out of business or giving their customers a really good bearing even if they have to "pirate" the invention for which a patent was granted to Hopkins that has been declared valid by both the Eastern and Western Railroad Association?

Does the Le Roy Company expect to build up a business by infringing Hopkins' Patent, and selling bearings, and a lawsuit with them?

In the recent interference patent fight between Hopkins and Le Roy, the Commissioner of Patents, in his final decision, which was rendered August 31, 1883, says:

"On the broad claim, as well as the specific claim covering the device embodying not only the broad but the specific invention of a journal bearing with a soft metal lining, with ridges or projections so arranged that, upon being brought in contact with the axle, the ridges or projections will yield and spread out so as to make a perfectly-fitting box, priority of invention must be awarded to Hopkins."

As to the specific arrangement for which priority of invention was awarded to Le Roy, all will perceive that the broad claim for which priority of invention is awarded to Hopkins, and the very broad claim embodied in the patent granted him Oct. 16, 1883, in the following words: "A Journal Bearing made of two different metals, one of soft or yielding nature, and the other of a hard or unyielding nature, the soft or yielding carrying ridges or spurs which receive the initial pressure of the journal, and by the rolling action of the same and the load pressure upon the bearing becomes crushed down and spread in conformity with the contour thereof, as described, whereby the surfaces in wearing contact are adjusted to each other, substantially as specified,"

COVERS THE WHOLE CASE

AN OLD ADAGE SAYS:
"SUE A BEGGAR AND CATCH A LOUSE."

Will Mr. McLean, of the so-called Le Roy Journal Bearing Co., give to Mr. Hopkins and to Railroad Companies and Car-Builders any reliable proof that his Company is in reality anything else than an irresponsible piratical concern (see his advertisement) that is absolutely judgment proof, and any guarantees it may offer against suits by Hopkins are not perfectly worthless, and in so doing will he talk plain, honest common sense, instead of craftily stringing together a lot of words (see his advertisement) that mean nothing unless they mislead?

No invention ever did or can infringe any patent. It is not the invention in any case that infringes, but the making, selling or using of a thing patented without the right to do so. Talk about making an offer to settle a point that does not exist is as cheap as it is misleading and worthless.

As to his being the prior inventor of Bearings with soft metal ridges for receiving the Initial pressure of the Journal, and leaves him absolute master of the situation.

All parties are hereby warned that my rights under said Letters Patent will be enforced.

D. A. HOPKINS, Patentee and Manufacturer,

113 Liberty Street, - - - - New York.

VAN DUSEN PATENT NUT LOCK.

A Perfect Nut Lock, Cheaper and Better than Jamb Nuts, or even Wooden Washers.

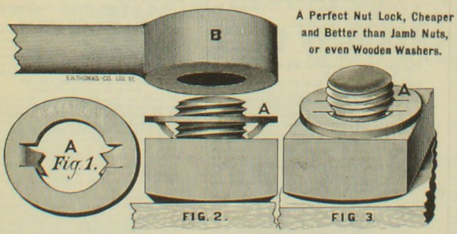

Fig. 1.—*A*, represents nut lock detached. Fig. 2.—*A*, nut lock in position, ready to apply; *B*, the tool used in setting the lock—it is simply a bar of iron having a hole ⅛ inch larger than the bolt—when placed as indicated one or two smart blows with a hammer on the tool force the lock flat, the teeth entering the metal of the bolt. Fig. 3.—*A*, represents the lock applied.

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W. Bell Smith, *M. M. & C. B.*.....Monroe, La.
New Orleans & North-Eastern R. R.
T. S. Williams, *Supt*........New Orleans, La.
I. W. Fowle, *M. M.*............Meridan, Miss.
Cincinnati Northern Ry. (*See Tol., Cin. & St. L.*
Cincinnati, Selma & Mobile R.R. 5 g. 71 m. 6 lo. 148 c.
A. McCollister, *Supt*...............Selma, Ala.
H. L. Wright, *Pur. Agt*............Selma, Ala.
J. M. Levis, *M. M.*...............Marion, Ala.
Cincinnati, Van Wert & Michigan R. R.
4-9 g. 81 m. 7 lo. 168 cars.
E. C. Dawes, *Gen. Man*...........Van Wert, O.
D. R. Ennis, *Supt. & P. A.*........Van Wert, O.
Jno. L. Behan, *M. M. & M. C. B.*..Van Wert, O.
Cin., Wabash & Mich. Ry. 4-8½ g. 165 m. 13 lo. 402 c.
Norman Beckley, *Gen. Man. & P. A.*Elkhart, Ind.
O. W. Lamport, *Supt*............Wabash, Ind.
S. B Tinker, *M. M. & M. C. B*....Wabash, Ind
Cin., Wash. & Balt. 4-8½ g. 312 m. 65 lo. 1,422 cars
Jas. H. Stewart, *Gen. Man*.......Cincinnati, O.
Edw. Evans, *M. M*...............Chillicothe, O.
T. G. Duncan, *Supt. Car Dept*.......Zaleski, O.
Cincinnati, Wheeling & New York R.R. 4-8½ g. 13 m.
Thos. R. Sharp, *Pres*..........New York, N. Y.
Cincinnati & Eastern Ry. 3 g. 100 m. 7 lo. 133 cars.
S. Woodward, *Gen. Man*.........Cincinnati, O.
G. H. Wilber, *Gen. Sup. & Pur. Agt.*Cincinnati, O.
P. W. Naughton, *M. M.*............Newtown, O.
Cincinnati & South-Eastern Ry. 4-8½ g. 18 m.
John V. Patton, *Gen. Man*.........Newport, Ky.
Clarksburg, Weston & Glenville R. R.
3 g. 26 m. 3 lo. 45 cars.
A. H. Kunst, *Pres. & Gen. Man.*Weston, W. Va.
Sam. A. Steel, *M. M*............Weston, W. Va.
F. Dillie, *M. C. B*..............Nottingham, O.
Cleveland, Columbus, Cincinnati & Indiana and Indianapolis & St. Louis Rys. and Dayton & Union R. R. 4-8½ g. 785 m. 246 lo. 7,988 cars.
E. B. Thomas, *Gen. Man*.........Cleveland, O.
J. L. Yale, *Pur. Agt*..............Cleveland, O.
W. F. Turreff, *Gen. M. M*.........Cleveland, O.
Col. & Cin. Div.: Robt. Blee, *Supt*.Cleveland, O.
Wm. Garsting, *M. M.*..............Cleveland, O.
A. G. Steinbrenner, *G. For. Car Dept.* do.
Ind'p'lis Div.: John O. Ewan, *Supt.*.Ind'polis, Ind
T. W. Ranson, *M. M*..........Brightwood, Ind.
N. Mark, *G. For. Car Dept.*Brightwood, Ind.
Ind. & St L. Ry.: Tho. Burrows, *Supt.*St. Louis, Mo.
T. W. Ranson, *M. M. & C. B.*Brightwood, Ind.
Day. & Un. Rd.: J. H. Barrett, *Supt.*Cincinnati, O
H. S. Gordon, *For. M. Shops*.......Dayton, O.
Cleveland, Delphos & St. Louis R. R.
3 g. 56 m. 3 lo. 39 cars.
I. H. Burgoon, *Gen. Man*..........Delphos, O.
B. F. Marshall, *M. M*..............Delphos, O.
Cleveland, Indiana & St. Louis R. R.
4-8½ g. 19 m. 2 lo. 20 cars.
J. A. Larned, *Rec. & Supt*......Anderson, Ind.
Cleveland, Mt. Vernon & Delaware R. R.
4-9 g. 144 m. 24 lo. 828 c.
N. Monsarrat, *Gen. Supt*..............Akron, O.
G. M. Taylor, *M. M. & C. B.*....Mt. Vernon, O.
Cleve., Youngstown & Pitts. R. R. 3 g. 30 m. 3 lo. 138 c.
D. T. Lumley, *Gen. Supt*..........Alliance, O.
C. H. Dorman, *M. M. & M. C. B.*...Alliance, O.
Cleveland, Lorain & Wheeling Ry.
4-8½ g. 158 m. 31 lo. 1,878 cars.
Oscar Townsend, *Gen. Man*......Cleveland, O.
Wm. Thornburg, *Supt*..............Lorain, O.
W. A. Stone, *M. M*..................Lorain, O.
Cleve. & Marietta R. R. (*See Wheel. & Lake Erie.*)
Cleveland & Pittsburg. (*See Penna. Co.; (4) Div.*)
Clifton & Port Hudson R. R. 4-8½ g. 22 m. 3 lo. 12 c.
D. W. Pipes, *Supt*.................Clinton, La.
W. F. Lockwood, *M. M*............Clinton La.
Clove Branch R. R. 4-8½ g. 4 m. 1 lo. 61 cars.
C. L. Kimball, *Supt*..........Mattewan, N. Y.
W. G. Vanbuskirk, *M. M*...Dutchess Jc., N. Y.
Coburg, Peterborough & Marmora Ry.
5-6 g. 47 m. 5 lo. 255 cars.
Jas. R. Barber, *Gen. Supt*.......Cobourg, Ont.
Jas. Clark, *M. M*..................Cobourg, Ont
John Tinney, *M. C. B*.............Cobourg, Ont.
Colorado Central R. R. (*See Un. Pac.; (4) Div.*)
Columbia & Greenville R. R. (*See Rich. & D.; (3) Div.*)
Columbia & Puget Sound R.R. 3 g. 21 m. 7 lo. 114 c.
J. L. Howard, *Gen. Supt*..San Francisco, Cal.
Columbus, Hocking Valley & Toledo Ry.
4-9 g. 324 m. 90 lo. 7,353 cars.
G. R. Carr, *Gen. Supt*.............Columbus, O.
W. M. Greene, *Pur. Agt*...........Columbus, O.
Ira G. Hutchins, *M. M*...........Columbus, O.
J. M. Rockafield, *M. C. B*.........Columbus, O.
Tol. Div.: M. T. Seymour, *Supt*......Columbus, O.
Hock. V. Div.: M. P. L. Booth, *Supt.*Columbus, O.
Ohio Riv. Div.: C. D. Norris, *Supt*.......Logan, O.
Columbus & Eastern R. R. In progress
J. E. Redfield, *Pres*..........Columbus, Ohio.
Columbus & Maysville Ry. (*See Cin. & East.*)
Columbus & Rome R. R. 3 g. 33 m. 3 lo. 30 cars.
M. E. Gray, *Supt*...............Columbus, Ga.
Columbus & Western Ry. 5 g. 89 m. 6 lo. 53 cars
E. A. Flewellen, *Gen. Man*.......Columbus, Ga.
R. A. Bridges, *M. M*..............Opelika, Ala.
Concord R. R. 4-8½ g. 141 m. 38 lo. 1,235 cars.
H. E. Chamberlain, *Supt. & P. Agt.*Concord, N.H.
J. T. Gordon, *M. M. & C. B.*.....Concord, N. H
Concord & Claremont R. R. (*See Northern of N. H.*
Conn. Riv. and Ver. Val. R. Rs. 4-8½ g. 130 m. 42 lo. 554 c.
J. Mulligan, *Supt. & Pur. Agt.*Springfield, Mass.
W. H. Stearns, *M. M. & M. C. B.*.Springfield, Mass.
Conn. & Passumpsic Rivers R. R. (*See Passumpsic*)
Connotton Valley R. R. 3 g. 160 m. 26 lo. 997 cars.
Samuel Briggs, *Gen. Man*.........Cleveland, O.
B. C. Bosworth, *M. M*...............Canton, O.
Cooperstown & Susquehanna Valley R. R.
4-8½ g. 16 m. 2 lo. 14 cars.
Andrew Shaw, *Pres*.........Cooperstown, N. Y.
A. Mumford, *M. M*..........Cooperstown, N. Y.
Corning, Cowanesque & Antrim Ry. (*See Syr., G. & C.*)
Cornwall R. R., 4-8½ g. 12 m. 5 lo. 166 cars
J. M. Havard, *G. Supt. & M. M*....Lebanon, Pa.
Levi Blonch, *M. C. B*..............Lebanon, Pa.
Coudersport & Port Allegheny R. R.
3 g. 17 m. 2 lo. 64 cars.
B. A. McClure, *Gen. Supt*.....Coudersport, Pa.
Credit Valley Ry. 4-8½ g. 184 m. 22 lo. 535 cars.
Wm. Whyte, *Gen. Supt*..........Toronto, Ont.
John Macnab, *Pur. Agt*..........Toronto, Can.
D. Preston, *Mech. Supt*..........Toronto, Can.
Crooked Creek R. R. 3 g. 9 m. 1 lo. 37 cars.
Walter C. Willson, *Gen. Man.*Webster City, Ia.
Geo. W. Post, *Pur. Agt*..............Lehigh, Ia.
Crown Point Iron Co. R. R. 3 g. 13 m. 4 lo. 113 c.
A. L. Inman, *Gen. Man*.........Plattsburg, N. Y.
H. L. Reed, *Pur. Agt*........Crown Point, N. Y.
J. M Davies, *Supt. & M. M*..Crown Point, N. Y.
J. C. Sherman, *M. C. B*.....Crown Point, N. Y.
Cumberland Ry. 4-8½ g. 32 m. 1 lo. 64 c.
J. A. Killam, *Gen. Man*...........Parsboro, N. S.
K. McKinnon, *M. M*...............Parsboro, N. S.
Cumberland Valley R. R. 4-9 g. 127 m. 25 lo. 474 cars.
J. F. Boyd, *Supt*...........Chambersburg, Pa.
A. S. Hull, *M. M*...........Chambersburg, Pa.
C. Wicke, *M. C. B.*.........Chambersburg, Pa.
Cumberland & Maurice River R. R. 4-8½ g. 20 m.
L. H. Dowdney, *Supt*.........Port Morris, N. J.
Cumberland & Penn. R. R. 4-8½ g. 55 m. 28 lo. 625 c.
P. L. Burwell, *Gen Supt & P. A.*Cumberland, Md.
N. W. Howson, *Mast. of Mach.*Mt. Savage, Md.
Nathan Binix, *M. C. B*..........Mt. Savage, Md.

D

Danville & New River R. R. 3 g. 43 m. 2 lo. 30 c.
W. T. Sutherlin, *Gen. Man*...........Danville, Va.
J. F. Morton, *M. M*...................Danville, Va.
Danbury & Norwalk R. R. 4-8½ g. 36 m. 7 lo. 112 c.
C. M. Crawford, *G. Supt. & P. A.*.S. Norwalk, Ct.
W. H. Wilkinson, *M. M. & C. B.*Danbury, Conn.
Danville, Mocksville & So.-Wn. R. R. 3 g. 28 m.
H. M. Shivler, *Supt*...........Leakesville, N. C.
Danville, Olney & O. R. R.R. 4-8½ g. 110 m. 5 lo. 83 c.
C. E. Henderson, *Rec. & Man*...........Olney, Ill.
W. A. Bell, *M. M & C. B*..............Kansas, Ill
Dayton & Union R. R. (*See Clev., Col., Cin. & Ind.*)
Dayton & Michigan R. R. (*See Cin., Ham. & Day.*)
Del. Lackawanna & W. and N. Y., Lack. & W. R. Rs.
4-8½ g. 930 m. 436 lo. 31,989 cars.
Wm. F. Halstead, *Gen. Supt*.......Scranton, Pa.
G. W. B. Cushing, *Pur. Agt*...New York, N. Y
Walter Dawson, *Mast. of Mach*...Scranton, Pa.
Robt. McKenna, *M. C. B*...........Scranton, Pa.
Bloomsb'g Div.: C. Graham, *M. M.*.Kingston, Pa.
Utica Div.: A. C. Salisbury, *Supt*....Utica, N. Y.
Thos. Thatcher, *M. M*..............Utica, N. Y.
Morris & Essex Div.; Sussex; P. & D. and C. R. Rs.
A. Reasoner, *Supt*...............Hoboken, N. J.
W. H. Lewis, *M. M*.............Kingsland, N. J.
J. W. Baker, *Mast. Car Rep*........Dover, N. J.
Oswego & Syracuse Div.:
W. B. Phelps, *Supt*..............Oswego, N. Y.
Jas. Buchanan, *M. M*..........Syracuse, N. Y.
Syracuse, Binghamton & New York R. R.
4-8½ g. 81 m. 20 lo. 598 cars.
W. K. Niver, *Gen. Supt*.........Syracuse, N. Y.
Jas. Buchanan, *M. M*............Syracuse, N. Y.
Cayuga Div.: W. R. Humphrey, *Supt* Ithaca, N. Y.
Delaware, Maryland & Virginia R. R.
4-8½ g. 101 m. 7 lo. 145 cars.
Tho. Groom, *Supt*......................Lewes, Del.
Geo. Messick, *M. M*....................Lewes, Del.
W. H. Virden, *M. C. B*.................Lewes, Del.
Delaware River R. R. 4-8½ g. 20 m. 3 lo. 4 cars.
E. H. Green, *Supt*...........Pedricktown, N. J.
Delaware Western R. R. (*See Balt. & Phil.*)
Delaware & Chesapeake R. R. (*See Penna.; (4) Div.*)
Delaware & Hudson Canal Co.
4-3 and 4-8½ g. 634 m. 180 lo. 10,799 cars.
C. F. Young, *Gen. Man*.........Honesdale, Pa.
C. F. Young, *Pur. Agt*............Albany, N. Y.
R. C. Blackall, *Supt. of Mach*......Albany, N. Y.
Susq. Div.: C. D. Hammond, *Supt.* Albany, N. Y.
Tho. Howard, *M. M*..............Oneonta, N. Y.
J. R. Skinner, *M. C. B*..........Oneonta, N. Y.
Sar. & Ch. Divs.: T. Voorhees, *Supt*...Troy, N. Y.
J. L. Corey, *M. M*..........Green Island, N. Y.
Chr. Körner, *M. C. B*.......Green Island, N. Y.
Pa. Div.: R. Manville, *Supt & Pur Agt.* and
S. H. Dotterer, *M. M*..........Carbondale, Pa.
T. Orchard, *M. C. B*...........Carbondale, Pa.
Denver Circle R. R. 3 g. 12 m. 7 lo. 15 cars.
Theo. C. Henry, *Gen. Man*..........Denver, Col.
J. H. Bedson, *Gen. Supt*............Denver, Col.
Denver, Utah & Pacific R. R. 3 g. 34 m. 2 lo. 58 c.
L. M. Fouts, *Supt*....................Denver, Col.
Denver & New Orleans. 4-8½ g. 140 m. 11 lo. 400 c.
C. W. Fisher, *Gen. Man*.............Denver, Col.
Chas. Wheeler, *Pur. Agt*..........Denver, Col.
J. H. Kirk, *M. M. & M. C. B*.......Denver, Col.
Denver & Rio Grande Ry. 3 g. 1,665 m. 222 lo. 5,932 c.
D. C. Dodge, *Gen. Man*..............Denver, Col.
C. M. Hobbs, *Pur. Agt*...............Denver, Col.
N. W. Sample, *Supt. M. P. & M*.....Denver, Col.
(1) Col. & N. M. Div.: R. E. Ricker, *G. S.* Denver, Col.
1st Div.: W. W. Borst, *Supt*.......S. Pueblo, Col.
2d Div.: Cole Lydon, *Supt*..........Alamosa, Col.
3d Div.: G. W. Cook, *Supt*.........Leadville, Col.
4th Div.: R. M. Ridgway, *Supt*.......Salida, Col.
(2) Utah Div.: W. H. Bancroft, *G. S.*S. Lake City, Utah.
Des Moines, Osceola & Southern R. R.
3 g. 100 m. 7 lo. 253 cars.
Henry Stivers, *Gen. Supt*...........Osceola, Ia.
L. D. Berry, *M. M*......................Osceola, Ia.
Elias Tonet, *M. C. B*..................Osceola, Ia.
Des Moines & Ft. Dodge. 4-8½ g. 144 m. 13 lo. 350 c.
C. N. Gilmore, *Supt*..............Des Moines, Ia.
John McGrayel, *M. M*......Grand Junction, Ia.
E. A. Avery, *M. C. B*.......Grand Junction, Ia.
Det., Bay City & Alpena R. R. 3-2 g. 48 m. 5 lo. 227 c.
Milo Eastman, *Supt*...........East Tawas, Mich.
Det., Gr. H. & Mil. Ry. 4-8½ g. 189 m. 39 lo. 696 c.
G. R. Nash, *Gen. Man*..............Detroit, Mich.
John S. Lorimer, *Storekeeper*....Detroit, Mich.
W. J. Morgan, *Supt*..................Detroit, Mich.
H. Roberts, *Mech. Supt*.......Ft. Gratiot, Mich.
Det., Lansing & No'n R. R. 4-8½ g. 222 m. 84 lo. 1027 c
John B. Mulliken, *Gen. Man*.......Detroit, Mich.
Allan Bourn, *Pur. Agt*...............Detroit, Mich.
Thos. M. Fish, *Gen. Supt*..............Ionia, Mich.
G. C. Watrous, *M. M. & C. B*.........Ionia, Mich.
Det., Mack. & Marq. R.R. 4-8½ g. 152 m. 16 lo. 1,112 c.
D McCool, *Gen. Supt. & P. A.* Marquette, Mich.
W. J. Tench, *Pur. Agt*..........Marquette, Mich.
John B. Wilson, *Mech. Supt*....Marquette, Mich.
Dorchester & Delaware R.R. (*See Penna. (4) Del. Div.*)
Dubuque & Dakota R. R. 4-8½ g. 64 m. 2 lo. 54 cars.
A. C. Goodrich, *Supt*.................Waverly, Ia.
W. S. Couch, *Pur. Agt*..............Dubuque, Ia.
Duck River Valley R. R. (*See Nash., Chat. & St. L.*)
Dunkirk, Allegheny Valley & Pittsburgh R. R.
4-8½ g. 91 m. 14 lo. 102 cars.
D. Thayer, *Gen. Supt*...........Dunkirk, N. Y.
R. C. Moore, *Pur. Agt*.........New York, N. Y.
J. C. Haggett *M. M. & C. B*.....Dunkirk, N. Y.

E

East Alabama Ry. 5 g. 22 m. 3 lo. 19 cars.
W. W. Barnes, *Supt*...............Opelika, Ala.
East Broad Top R. R. 3 g. 30 m. 7 lo. 260 cars.
A. W. Sims, *Supt*..................Orbisonia, Pa.
A. W. Greenwood, *M. M*.........Orbisonia, Pa.
East St Louis & Carondelet Ry. 4-9 g. 4 lo. 27 c.
Joseph Hill, *Gen. Supt*......East St. Louis, Ill.
East Tenn. & Western North Car. R. R.
3 g. 34 m. 2 lo. 70 cars.
Thomas E. Matson, *Supt*..Elizabethton, Tenn.
East Tennessee, Virginia & Georgia R. R.
5 g. 1,453 m. 173 lo. 3,670 cars.
Henry Fink, *V. P. & Gen. Man.*Knoxville, Tenn.
J. F. O'Brien, *Gen. Supt*.......Knoxville, Tenn.
J. E. Wilcox, *Pur. Agt*.........Knoxville, Tenn.
East Tenn. Div. and No. Car. and Ohio Branches:
F. K. Huger, *Supt*...............Knoxville, Tenn.
B. J. Sitton, *M. M*...............Knoxville, Tenn.
Jos. Armbruster, *M. C. B*....Knoxville, Tenn.
Alabama Div.: J. M. Bridges, *Supt*...Selma, Ala.
Simon Gay, *M. M*.......................Selma, Ala.
W. W. Pierce, *M. C. B.*...............Selma, Ala.
Memphis & Charleston R. R. (Div.):
R. B. Pegram, Jr., *Supt*.......Memphis, Tenn.
H. N. Burford, *M. M*............Memphis, Tenn.
Atlanta Div.: J. W. Fry, *Supt*......Atlanta, Ga.
W. A. Warden, *M M*....................Atlanta, Ga.
J. H. Perkins, *M. C. B.*...............Atlanta, Ga.
Brunswick Div.: J. E. Mallory, *Supt*..Macon, Ga.
East & West R. R. of Ala. 3 g. 110 m. 9 lo. 85 c.
John Postell, *Manager*............Cedartown, Ga.
M. M. & C. B.........Cedartown, Ga
Eastern R. R. 4-8½ g. 283 m. 110 lo. 2,268 cars.
Payson Tucker, *Gen. Man*.........Boston, Mass.
D. W. Sanborn, *Mast. of Trans.*.Boston, Mass.
G. F. Hurd, *Pur. Agt*..............Boston, Mass.
Amos Pilsbury, *S. M. P. & M.*..E. Boston, Mass.
A. M. Waitt, *G. For. Car Dept*......Salem, Mass.
Con'y Div.: J. W. Sanborn, *Supt.*, Wolfboro J., N.H.
Eastern Kentucky R. R. 4-8½ g. 34 m. 5 lo. 160 c.
H. W. Bates, *Man. & Pur. Agt*... Riverton, Ky.
H. W. Crawford, *M. M*..........Hunnewell, Ky.
Eastern (Maine) R. R. (*See Maine Central.*)
Eastern Shore R. R. 4-8½ g. 38 m. 3 lo. 9 c.
W. Thompson, *Supt*.........Princess Anne, Md.
F. Strattner, *M. M*...........Princess Anne, Md.
Elberton Air-Line R.R. (*See Rich. & Dan. N. G. Brs.*)
Elizabeth City & Norfolk R. R. (*See Norfolk So.*)
Elizabethtown, Lex. & Big Sandy R.R. (*See Ches. & O.*)
Emmitsburg R. R. (*See Western Md.*)
Erie & Pittsburg R. R. (*See Penna. Co.; (3) Div.*)
Eureka Springs Ry 4-8½ g. 19 m. 1 lo. 9 cars.
Powell Clayton, *Gen. Man.*Eureka Springs, Ark.
Eureka & Palisade R. R. 3 g. 97 m. 7 lo. 125 cars.
B. Gilman, *Gen. Supt & Pur. Agt.*.Eureka, Nev.
J. M. Crawford, *M. M*..............Palisade, Nev.
A. S. Longley, *M. C. B*...........Palisade, Nev.
European & North American R. R. (*See Maine Cen.*)
Evansville, Rockport & E'n Ry. 4-9 g. 71 m. 5 lo. 98 c
H. L. Shepard, *Supt*..............Evansville, Ind.
Evansv. & Terre Haute. 4-8½ g. 169 m. 26 lo. 973 c.
D. J. Mackey, *Gen. Supt*.........Evansville, Ind.
John Torrance, *M. M*..............Evansville, Ind.

F

Fitchburg R. R., 4-8½ g. 152 m. 100 lo. 3,430 cars.
John Adams, *Gen. Supt*...........Boston, Mass.
F. S. Pratt, *Pur. Agt*...............Boston, Mass.
G. A. Coolidge, *Supt. M. P.*.........Boston, Mass.
W. A. Foster, *Asst. Supt. M. P.*..Fitchburg, Mass.
J. W. Marden, *M. C. B*.......Charlestown, Mass.
Flint & Pere Marq. 4-8½ g. 346 m. 72 lo. 2,100 cars.
H. C. Potter, *Gen. Man*.........E. Saginaw, Mich.
D. Edwards, *Asst. Gen. Man.*.E. Saginaw, Mich.
G. G. Cook, *Pur. Agt*............E. Saginaw, Mich.
Sanford Keeler, *Gen. Supt*..E. Saginaw, Mich.
W. F. Potter, *Supt.* (E. Div.)..E. Saginaw, Mich.
M. V. Meredith, *Supt.* (W. Div.)E. Saginaw, Mich.
T. J. Hatswell, *M. M*............E. Saginaw, Mich.
R. McPherson, *M. C. B*.........E. Saginaw, Mich.
Florida Ry. & Nav. Co. 5 g. 488 m. 31 lo. 307 c.
D. E. Maxwell, *Gen. Supt*.... Fernandina, Fla.
R. V. Dohoney, *M. M. & C. B* Fernandina, Fla.
Florida Southern Ry. 3 g. 91 m. 6 lo. 96 cars.
Sherman Conant, *Gen. Man*.........Palatka, Fla.
Jas. D. Hollister, *Supt*..............Palatka, Fla.
Fonda, Johnst'n & Gloversv. 4-8½ g. 26 m. 5 lo. 35 c.
Lawton Caten, *Supt*..........Gloversville, N. Y.
G. V. Putman, *M. M*..........Gloversville, N. Y.
Fond du Lac, Amboy & Peoria. 3 g. 30 m. 2 lo. 35 c.
Alonzo Kinyon, *Supt. & P. A.*Fond du Lac, Wis.
Fort Dodge & Fort Ridley R. R. (*See Minn. & St. L.*)
Franklin & Prov. & Hopkinton. 22 m.
E. T. Logee, *Supt*....................Milford, Mass.
Ft. Madison & No.-West'n Ry. 3 g. 45 m. 5 lo. 127 c.
S. B. Kenrick, *Supt. & Pur. Agt.*Ft. Madison, Ia
I. L. Lamb, *M. M. & C. B*.......Ft. Madison, Ia.
Ft. Wayne, Cin. & Louisv. 4-8½ g. 128 m. 10 lo. 250 c.
White Water R. R 4-8½ g. 65 m. 5 lo. 170 cars.
W. W. Worthington, *Gen. Supt*...Ft. Wayne, Ind.
T. H. Haberkorn, *M. M*.........Ft. Wayne, Ind.
Wm. Knight, *M. C. B*.............Ft. Wayne, Ind.
Fort Worth & Denver City Ry.
4-8½ g. 114 m. 8 lo. 443 cars.
C. L. Frost, *Gen. Supt*......Fort Worth, Tex.
Freehold & New York Ry. 4-8½ g. 15 m. 4 lo. 40 c.
J. E. Ralph, *Supt. & Pur. Agt*..Keyport, N J.
M. C. Mooney, *M. M*...............Freehold, N. J.
C. H. Snedeker, *M. C. B*..........Freehold, N. J.
Fulton County N. G. Ry. 3 g. 61 m. 4 lo. 168 cars.
A. C. Atherton, *Gen. Supt. & P. Agt.*Lewiston, Ill.

G

Gainesville & Dahlonega R. R. 3 g. 15 m.
W. P. Price, *Pres*................Dahlonega, Ga.
Gainesville, Jefferson & Southern R.R. (*See Cen. of Ga*)
Gal., Harrisburg & San Antonio Ry. (*See Cen. Pac.*)
Galveston, Houston & Hend. R.R. (*See Mo. Pac. (5) Div.*)
Galveston, Sabine & St. Louis Ry.
4-8½ g. 15 m. 2 lo. 27 cars.
Brad. Barner, *Gen. Man*.........Longview, Tex.
Chas. H. Jewell, *Gen. Supt*......Longview, Tex.
Geneva, Ithaca & Sayre R. R. (*See Lehigh Val.*)
George's Creek & Cumberland R. R.
4-9 g. 25 m. 6 lo. 212 cars.
J. A. Millholland, *Gen. Man*..Cumberland, Md.
Georgetown & Lane's R. R. 5 g. 36 m. 2 lo. 52 c.
G. W. Earle, *Gen. Supt*......Georgetown, S. C
Georgia R. R. 5 g. 307 m. 42 lo. 1,017 cars.
John W. Green, *Gen. Man*..........Augusta, Ga.
John S. Cook, *M. M*...................Augusta, Ga.
T. M. Preval, *M. C. B*...............Augusta, Ga.
Georgia Pacific Ry. 5 g. 218 m.
I. Y. Sage, *Gen. Supt*........Birmingham, Ala.
S. H. Purcell, *Div. Supt*.......Greenville, Miss.
J. A. Branigan, *M. M*...........Greenville, Miss.
J. B. Shelton, *M. C. B*..........Greenville, Miss.
Grand Haven R. R. (*See Chic. & W. Mich.*)
Grand Junction Ry. (*See Midland of Can.*)
Grand Rapids, Indiana & Mackinaw. (*See Gr. R. & I.*)
G'd Rap., Newaygo & L. S. R. R. (*See Chic. & W. M.*)
Grand Rapids & Indiana. 4-8½ g. 528 m. 52 lo. 1,724 c.
W. O. Hughart, *Gen. Man.*Grand Rapids, Mich.
W. R. Shelby, *Pur. Agt*....Grand Rapids, Mich.
S. D. Bradley, *M. M*......Grand Rapids, Mich.
No'n Div.: J. M. Metheany, *Supt.*G'nd Rap., Mich.
So'n Div.: P. S. O'Rourke, *Supt.*Fort Wayne, Ind.
Grand Southern Ry. of New Brunswick.
4-8½ g. 82 m. 5 lo. 54 cars.
J. N. Greene, *Gen. Man*.......St. George, N. B.
F. W. Holt, *Supt*...............St. George, N. B.
Thomas Logan, *M. M*..........St. George, N. B.
Grand Tower & Carbondale. 4-8½ g. 25 m. 6 lo. 357 c.
T. M. Williamson, *Supt. & P. A.*.Gr. Tower, Ill.
Hugh Smith, *M. M. & C. B*....Grand Tower, Ill.
Grand Trunk Ry. 4-8½ g. 2,332 m. 660 lo. 16,330 c.
Joseph Hickson, *Gen. Man*......Montreal, Can.
Jas. Stephenson, *Supt*...........Montreal, Can.
Wm. Wainright, *Asst. Man*.......Montreal, Can.
Mont. Divs.: W. J. Spicer, *Supt*..Montreal, Can.
Jno. Taylor, *Gen. Storekeeper.*Montreal, Can.
Herbert Wallis, *Mech. Supt*...Montreal, Can.
Wm. McWood, *Supt. Car Dept.*Montreal, Can.
J. Haskoni, *Div. M. S*.........Richmond, P. Q.
Gt. West'n Div.: Chas. Stiff, *Supt* Hamilton, Ont.
E. Baines, *Store Kpr*...............London, Ont.
C. K. Domville, *Mech. Supt*....Hamilton, Ont.
C. F. Hanson, *Lo. For*..............London, Ont.
J. D. McIlwain, *Supt. Car Dept*..London, Ont.
Chi. & Gr. Trunk Ry. 4-8½ g. 339 m. 103 lo. 1,191 c.
W. J. Spicer, *Gen. Man*...........Chicago, Ill.
W. H. Pettibone, *Supt*....Battle Creek, Mich.
A. Judd, *Pur. Agt*..............Fort Gratiot, Mich.
H. Roberts, *Mech. Supt*....Port Huron, Mich.
Midland of Can. 4-8½ g. 471 m. 44 lo. 1,423 c.
W. B. Ferguson, *Supt*..........Peterboro, Ont.
J. D. Barnet, *Mech. Supt*......Peterboro, Ont.
Grand Trunk, Georgian Bay & Lake Erie Ry. (*See G. T.*)
Great Western Ry. (*See Grand Trunk; G. W. Div.*)
Green Bay, Winona & St. Paul R. R.
4-8½ g. 250 m. 19 lo. 623 cars.
Timothy Case, *Gen. Man. & P. A.*Green Bay, Wis
A. Fenwick, *M. M*...............Ft. Howard, Wis
Green Cove Spring & Melrose R.R. 3 g. 32 m. 1 lo. 11 c
S. Ackley, *Pres*..................Philadelphia, Pa.
Greenwich & Johnsonville Ry. 4-8½ g. 15 m. 1 lo. 7 c.
J. H. Thompson, *Supt*.........Greenwich, N. Y.
Gulf. Col. & Santa Fé Ry. 4-8½ g. 536 m. 51 lo. 1,400 c.
Webster Snyder, *Gen. Man*..Galveston, Texas.
F. P. Killeen, *Sec*..................Galveston, Texas.
Jno. W. Thorne, *Pur. Agt*....Galveston, Texas.
W. H. Reilly, *M. M & M. C. B*..Galveston, Texas.
Gulf, W'n Texas & Pac. Ry. 4-8½ g. 68 m. 6 lo. 74 c.
M. D. Monserrate, *Supt. & Pur. Agt.*Cuero, Tex.
James Mooney *M. M*.................Cuero, Texas.

H

Hannibal & St. Jo. R. R. 4-8½ g. 292 m. 76 lo. 1,906 c.
J. F. Barnard, *Gen. Man*..............Chicago, Ill.
S. E. Crance, *Gen. Supt*............Hannibal, Mo.
Wm. Irving, *Pur. Agt*................Hannibal, Mo.
Jas. Long, *Supt. M. P. & Car Dep.*Hannibal, Mo.
Chas. Coller, *For. Car Dept*.......Hannibal, Mo.
Hanover Branch R. R. 4-8½ g. 8 m. 2 lo. 18 cars.
E. Y. Perry, *Supt*.............South Hanover, Mass.
Hanover Junction, Hanover & Gettysburg R. R.
4-8½ g. 74 m. 10 lo. 140 cars.
H. D. Scott, *Gen. Supt*..........Gettysburg, Pa.
John J. Bingley *M. M*...............Hanover, Pa.
Jas. Harthorn, *M. C. B*.............Hanover, Pa.
Harrisburg & Potomac R. R. 4-8½ g. 35 m. 3 lo. 35 c.
R. H. Middleton, *Supt*......Boiling Springs, Pa.
Hartford & Conn. Val. R. R. 4-8½ g. 47 m. 9 lo. 196 c.
O. M. Shepard, *Asst. Supt*.... New Haven, Ct.
John Henry, Jr., *M. M*..........Hartford, Conn.
Hartford & Conn. W'n R.R. 4-8½ g. 110 m. 16 lo. 495 c.
John F. Jones, *Supt*....................Hartford, Ct.
J. C. Barton, *M. M*......................Hartford, Ct.
Hartwell R. R. (*See Rich. & Dan.; N. G. Brs.*)
Hecla & Torch Lake R. R. 4-1 g. 5 m. 5 lo. 165 cars.
W. A. Childs, *Gen. Man*..........Calumet, Mich.
Herkimer, Newport & Poland Ry.
3-6 g. 17 m. 2 lo. 24 cars.
Albert Wilber, *Supt*..............Herkimer, N. Y.
Hobart & Manistee River R. R. 3 g. 9 m. 2 lo. 42 c.
H. W. Marsh, *Supt*....................Hobart, Mich.
Hot Springs R. R. 3 g. 25 m. 3 lo. 37 cars.
J. N. Conger, *Supt*..............Hot Springs, Ark.
L. Finlay, *M. M*.......................Malvern Ark.
Housatonic R. R. 4-8½ g. 126 m. 25 lo. 571 cars.
W. H. Yeomans, *Supt*............Bridgeport, Ct.
D. S. Draper, *Pur. Agt*............Bridgeport, Ct.
N. Slingland, *M. M*..............Falls Village, Ct.
J. J. Ferris, *M. C. B*............Falls Village, Ct.
Houston Belt Ry. 4-8½ and 3 gauge 16 miles.
S. L. Werden, *V. P. & Gen. Man.* Houston, Tex
Houston, East & West Tex. Ry. 3 g. 150 m. 10 lo. 570 c.
Paul Bremond, *Pr. & Pur. Agt*..Houston, Tex.
E. L. Bremond, *Gen. Man*..........Houston, Tex.
B. O. Diffey, *M. M*.....................Houston, Tex.
C. F. Schelewa, *M. C. B.*.........Houston, Texas.
Houston & Tex. Cen. Ry. 4-8½ g. 750 m. 78 lo. 2,526 c.
J. Waldo, *V. Pr. & Gen. Man*....Houston, Tex.
A. H. Swanson, *Gen. Tr. Man*....Houston, Tex.
Pur. Agt........New York, N. Y
L. C. Noble, *Gen. M. M*...........Houston, Tex.
James McGee, *M. C. B*............Houston, Tex.
So. & Wn. Divs.: M. G. Howe, *Supt.*Houston, Tex.
No. & Mi. Divs.: G. A. Quinlan, *Supt.*, and
C. H. Burns, *Asst. M. M*......Corsicana, Tex.
No.-Wn. Div.: Donald Allen, *Supt*.... Waco, Tex.
Humeston & Shenandoah R. R.
4-8½ g. 113 m. 18 lo. 80 cars.
F. O. Wyatt, *Gen. Man*............Clarinda, Ia.
C. H. Warren, *Supt*..................Clarinda, Ia.
W. B. Snyder, *M. M*...............Shenandoah, Ia.
Huntingdon & Br. Top Mt. 4-8½ g. 62 m. 18 lo. 69 c.
Geo. F. Gage, *Gen. Man*........Huntingdon, Pa.
Samuel B. Knight, *Pur. Agt*..Philadelphia, Pa.
William Barkla *M. M*..................Saxton Pa.

I

Illinois Central R. R. 4-8½ g. 1,928 m. 334 lo. 8,565 c.
E. T. Jeffery, *Gen. Supt*..............Chicago, Ill
O. Ott, *Pur. Agt*........................Chicago, Ill
Henry Schlacks, *Supt. of Mach*....Chicago, Ill.
W. B. Snow, *M. M. Car Works*.....Chicago, Ill
(1) Ill. & Ia. Divs.: C. A. Beck, *Supt*.....Chicago, Ill
Chic. Div.: T. J. Hudson, *Supt*.........Cairo, Ill
Wm. Renshaw, *M. M*.................Chicago, Ill.
Mid. Div.: H. L. Frisbie, *Supt*...........Pontiac, Ill.
Spring. Div.: W. Wilkinson, *Supt.*Springfield, Ill.
W. B. McKenna, *M. M*...................Clinton, Ill.
No'n Div.: J. C. Jacobs, *Supt*.............Amboy, Ill.
J. B. Edams, *M. M*......................Amboy, Ill.
Ia. Div.: M. Gilleas, *Supt*...............Dubuque, Ia.
Thos. W. Place, *M. M*................Waterloo, Ia.
(2) So. Divs.: C. M. Sheafe, *Supt*....New Orleans, La.
Geo. W. Baxter, *M. C. B*..McComb City, Miss.
So. Div.: J. M. Turner, *Supt.* do.
E. D. Anderson, *M. M*.....McComb City, Miss.
Miss. Div.: J. G. Mann, *Supt*......Jackson, Tenn.
J. F. White, *M. M*..........Water Valley, Miss.
Illinois Midland Ry. 4-8½ g. 176 m. 12 lo. 611 cars.
D. H. Conklin, *Rec. & Gen. Man*......Decatur, Ill.
O. E. Grady, *Train Mast*..............Decatur, Ill.
Frank Young, *For. Shops*..................Paris, Ill.
Illinois & St. Louis R. R. 4-8½ g. 19 m. 10 lo. 450 c.
C. H. Sharman, *Gen. Supt. & P. A.*St. Louis, Mo.
D. J. Timlin, *M. M*......................Belleville, Ill.
Charles Rothe, *M. C. B*..............E. St. Louis Ill.
Indiana, Bloomington & Western Ry.
4-8¾ g. 826 m. 112 lo. 4,067 cars.
C. E. Henderson, *Gen. Man.* Indianapolis, Ind.
I. H. Wilson, *Gen. Supt*.......Indianapolis, Ind.
H. C. Norton, *Pur. Agt*........Indianapolis, Ind.
Jos. S. Porter, *M. M*...................Sandusky, O.
B. Warren, *Gen. M. M.*..........Indianapolis, Ind.
Peoria Div.: E. Hiserodt, *M. M*.... Urbana, Ill.
St. Louis Div.: John King, *M. M.*Indianapolis, Ind.
Ohio So. Rd.: W. H. Van Tassall, *S.*.Springfield, O.
A. J. Sanborn, *M. M*..............Springfield, O.
Indiana, Illinois & Iowa R.R. 4-8½ g. 104 m. 5 lo. 83 c.
F. M. Drake, *Gen. Man*..............Kankakee, Ill.
T. P. Shonts, *Gen. Supt*.............Kankakee, Ill.
R. C. Ackley, *M. M*....................Kankakee, Ill.
Indiana & Illinois Southern Ry. 3 g. 91 m. 3 lo. 69 c.
W. C. Lyon, *Gen. Man. & P. Agt.*Robinson, Ill.
J. S. Pickering, *M. M. & C. B*...Effingham, Ill.
Indianapolis, Decatur & Springfield Ry.
(*See Ind., Bloom. & West'n.*)
Indianapolis & St. Louis R. R. (*See C., C., C. & I.*)
Indianapo. & Vincennes R. R. (*See Penna. Co.; (8) Div.*)
Intercolonial Ry. 4-8½ g. 846 m. 135 lo. 4,500 cars.
David Pottinger, *Chief Supt*.....Moncton, N. B.
T. V. Cook, *Gen. Storekeeper*...Moncton, N. B.
H. A. Whitney, *Mech Supt*......Moncton, N. B
Ewd. D. Shaffer, *M. C. B*.......Moncton, N. B.
M. & C. Div.: J. E. Price, *Supt*..Cambellton, N. B.
Hal. & St. J. Div.: J. J. Wallace, *Supt.*.Truro, N. S.
Q. & St. F. Div.: A. McDonald, *Supt.* Riv. du Loup, Q.
International Ry. 4-8½ g. 69 m. 7 lo. 12 cars.
D. E. McFee, *Supt*..............Sherbrooke, Que
J. Ruelle, *M. M*...................Sherbrooke, Que.
W. Charest, *M. C. B*............Sherbrooke, Que.
International & Gt. N'n R. R. (*See Mo. Pac.; (5) Div.*)
Iowa Falls & Sioux City R. R. (*See Ill. Cen.*)
Iron Ry. (*See Tol., Cin. & St. L.*)
Iron Mountain & Helena R. R. (*See Mo. Pac.; (4) Div.*)
Ithaca Auburn & Western Ry. (*See Southern Cen.*)

J

Jacksonville So.-E'n R. R. 4-8½ g. 54 m. 5 lo. 69 c.
E. S. Greenleaf, *Supt*...........Jacksonville, Ill.
Ira F. Petrie, *M. M*..............Jacksonville, Ill.
Jacksonville, St. Augustine & Halifax River Ry.
3 g. 76 m. 3 lo. 27 cars.
W. L. Crawford, *Gen. Man*..Jacksonville, Fla.
H. S. Ming, *Supt*..................Jacksonville, Fla.
Jacksonv., Pensacola & Mob. (*See Fla. Cent. & W.*)
Jamesville & Washington R. R. (*See Norfolk So'n.*)
Jeffersonv'l, Madison & Indpls. R. R. (*See (9) Pa. Co.*)
Jersey City & Albany R. R. 4-8½ g. 38 m.
J. W. McCulloh, *Manager*....Jersey City, N. J.
Jersey City & Bergen R. R. 4-8½ g. 6 m. 2 lo. 13 c.
T. M. Sayre, *Gen. Supt*..........Jersey City, N. J.
Jersey Shore, Pine Creek & Buff. Ry. (*See Phil. & R.*)
Junction & Breakwater R.R. (*See Del., Md. & Va.*

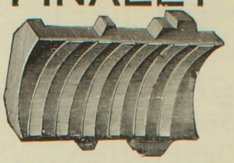
K

Kaaterskill R. R. 3 g. 8 m.
J. H. Jones, *Supt*...................Rondout, N. Y.
Kankakee & Seneca R.R. (*See Cin., Ind., St. L. & Chi.*)
Kansas Central R. R. (*See Union Pacific.*)
Kansas City, Fort Scott & Gulf R. R.
4-8½ g. 389 m. 75 l. 2,037 c.
Geo. H. Nettleton, *Gen. Man*..Kansas City, Mo.
L. W. Towne, *Supt*.............Kansas City, Mo.
H. P. Jacques, *Pur. Agt*........Kansas City, Mo.
J. S. McCrum, *M. M*............Kansas City, Mo.
A. N. Montier, *M. C. B*..........Kansas City, Mo.
Kansas Cy, Lawrence & So. Kan. (*See At., Top. & S. F.*)
Kansas City, Springfield & Memphis R. R
4-8½ g. 283 m. 10 lo. 456 cars.
George H. Nettleton, *Pres*....Kansas City, Mo.
L. W. Towne, *Supt*...............Kansas City, Mo.
H. P. Jacques, *Pur. Agt*........Kansas City, Mo.
J. S. McCrum, *M. M*............Kansas City, Mo.
A. H. Montier, *M. C. B*..........Kansas City, Mo.
Kansas City, St. Joseph & Council Bluffs; and St. Jo. & Des Moines R. Rs. 4-8½ & 3 g. 368 m. 41 lo. 1,148 c.
J. F. Barnard, *Gen. Supt*..........St. Joseph, Mo.
J. R. Hardy, *Supt*..................St. Joseph, Mo.
Wm. Irving, *Pur. Agt*.................Chicago, Ill.
F. A. Chase, *M. M*...................St. Joseph, Mo.
Thos. Aylesbury, *G. For. Car. Dep.*St. Joseph, Mo.
Kansas City & Southern Ry. 4-8½ g. In progress.
Wm. Bailey, *Pres*....................Kansas City, Mo.
Kansas Coal Belt R. R. 4-8½ g. In progress.
C. H. Malin, *Gen. Man*..................Girard, Kan.
F. A. Hill, *Supt*..........................Girard, Kan.
Kansas & Gulf Short Line R. R. 33 m. 2 lo. 32 cars.
Eli Culverhouse, *Gen. Man*..............Tyler, Tex.
V. K. Stevenson, *Pur. Agt*.....New York, N. Y.
Kendall & Eldred R. R. (*See Buf., N. Y. & Phil.*)
Kent Northern Ry. 4-8½ g. 27 m. 2 lo. 16 cars.
J. C. Brown, *Gen. Man*.......Richibucto, N. B.
Kentucky Central R. R. 4-9 g. 184 m. 22 lo. 640 cars.
G. W. Bender, *Supt*..................Covington, Ky.
A. H. Watts, *M. of Mach*..........Covington, Ky.
M. C. B..........Covington, Ky.
Kentucky & South Atlantic Ry. 3 g. 23 m. 3 lo. 52 c.
Geo. B. Harper, *Supt. & P. A.*.Mt. Sterling, Ky
S. P. Hatfield, *M. M*..............Mt. Sterling, Ky.
Keokuk & Des Moines R.R. (*See Chi., R. I. & Pac.*)
Kinzua R. R. (*See Buf., N. Y. & Phil.*)
Kingston & Pembroke Ry. 4-8½ g. 90 m. 9 lo. 214 c.
B. W. Folger, *Supt*...................Kingston, Ont.
J. H. Taylor, *Pur. Agt*..............Kingston, Ont.
J. H. Taylor, *M. M*..................Kingston, Ont.
Knox & Lincoln R. R. 4-8½ g. 49 m. 5 lo. 103 cars.
C. A. Coombs, *Supt*........................Bath, Me.
Wm. A. Field, *M. M*......................Bath, Me.
C. L. Turner, *M. C. B*....................Bath, Me.
Knoxville & Augusta R. R. 5 g. 16 m. 2 lo. 34 cars.
R. N. Hood, *Gen. Man. & P. Agt.*Knoxville, Tenn
J. M. Hood, *Supt*...................Knoxville, Tenn.

L

Lackawanna & Pittsburg R. R. 3 g. 101 m.
R. M. Patterson, *Gen. Supt*...Friendship, N. Y.
Lake Champlain & Moriah R.R. 4-8½ g. 8 m. 8 lo. 222 c.
E. B. Hedding, *Supt*...........Port Henry, N. Y.
Lake Erie & Western Ry. 4-8½ g. 388 m. 53 lo. 1,701 c.
J. H. Cheney, *Gen. Man*...... Bloomington, Ill.
D. S. Hill, *Gen. Supt*..........Bloomington, Ill.
T. H. Perry, *Pur. Agt*..........Bloomington, Ill.
H. L. Cooper, *Supt. of Equipment*....Lima, O.
Lake George & Muskegon River R. R.
4-8½ g. 20 m. 4 lo. 79 cars.

LE ROY FINALLY VICTORIOUS.



The following is the FINAL decision of the Patent Office in the matter of the Interference of HOPKINS vs. LE ROY, renaered August 31, 1883

"COPY."

Department of the Interior, United States Patent Office
Washington, D. C., Sept. 1, 1883.

'In the matter of the interference of
HOPKINS vs. LE ROY.
On Appeal to the Commissioner.

'For a Journal Box composed of Hard and Soft Metal, the **SOFT METAL BANDS PROJECTING ON THE JOURNAL BEARING SIDE BEYOND THE SURFACE OF THE HARD METAL**, Priority of Invention Must be Awarded to LE ROY."

By direction of the Commissioner.

Very respectfully,
(Signed) **SCHUYLER DINGEE, Chief Clerk.**

To T. V. LE ROY, Care John R. Bennett, No. 237 Broadway.
George Harding, Counsel.

Thus reversing all former decisions made in favor of HOPKINS, dissolving the interference heretofore declared in his favor, and sustaining the validity of the LE ROY Patent and every claim made by LE ROY for his Invention.

It is falsely pretended that our invention infringes an alleged patent held by Mr. Hopkins. We hereby offer **$2,500** *to Mr. Hopkins if he will commence and prosecute in good faith an action against us to settle the point; and, as we believe he has no valid patent, we stand ready to manufacture and sell his brasses in order that he may sue us. See Babbitt Patent, Sept. 4, 1840, and Joseph Gordnan, March 12, 1861. GEORGE W. McLEAN, President.*

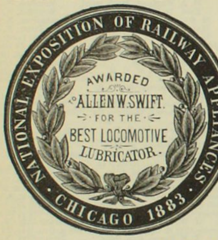
LE ROY JOURNAL BEARING CO.,

145 Broadway, New York City.
GEO. W. McLEAN, President.

THE "SWIFT" AUTOMATIC LUBRICATOR.

A PERFECT MACHINE FOR THE INTERNAL LUBRICATION OF THE

LOCOMOTIVE, MARINE & STATIONARY ENGINES.

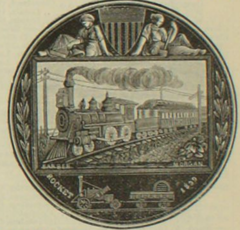


This device delivers any desired quantity to each cylinder POSITIVELY, and its feed-rate remains unchanged with the Engine at FULL STROKE, THROTTLED or REVERSED.

Will feed any ordinary Lubricant fro the lightest oils to the

HARDEST TALLOW

IN THE COLDEST WEATHER.



Positive Feed Flash "Sight."

NO EXTERNAL OR INTERNAL PIPES.

NO GLASS TUBES OR LOOSE JOINTS.

Approved by the Eastern and Western R. R. Association.

NOW IN USE ON THE LEADING RAILROADS IN THE COUNTRY, INCLUDING
Pennsylvania R. R., Union Pacific R. R., New York, West Shore & Buffalo, Chicago & Alton, Lehigh Valley, Delaware, Lackawanna & Western R. R.

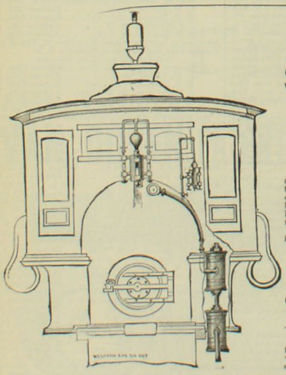
CORRESPONDENCE SOLICITED.

"SWIFT" LUBRICATOR COMPANY, ELMIRA, N. Y.

THE DETROIT LUBRICATOR COMPANY'S

SIGHT FEED LUBRICATORS,

For Locomotive Cylinders and Air-Pumps.



The attention of railroad men is invited to the Detroit Lubricator Co.'s Patent Sight Feed Lubricators, for oiling locomotive valves and cylinders, and the Westinghouse Air Pump. Both cups are placed within the cab. The valve cup has a double sight feed, each of which is connected to the right and left hand steam chests, by means of the so-called "tallow pipes," running beneath the jacket, thus securing *independent lubrication to each steam chest and cylinder from the one cup*. The oil is shown passing in drops through each sight feed glass to the parts to be lubricated, and can be regulated to feed fast or slow. *The feed is regular and continuous, going up or down grade, whether pressure is on or off*, thus securing perfect lubrication at all times. What is said in reference to the valve cup, is equally true in regard to our lubricator for the Westinghouse Pump. By the use of these cups, the saving in wear and tear of machinery and the additional power gained is simply wonderful, as is proved by actual results.*

We solicit a practical test, and will send one or more valve and air-brake cups to responsible parties on 30 days' trial. Details and drawings showing manner of attachment and prices furnished on application.

DETROIT LUBRICATOR CO.

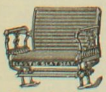
Office: 129 GRISWOLD ST., - - - DETROIT, MICH.

---

* Numerous examples can be furnished where engines have run *two years and over, without having had their valves faced*. The average mileage for the air-brake lubricator is 500 to 1,500 miles to the ½ pint, and examples can be given where this mileage has been greatly exceeded, among which is one of 1,612 *miles with a ½ pint* of oil on a daily run of 208 miles with 64 stops. This pump has run *nine months without having had 25 cents expended on it for repairs.*

HALE & KILBURN MANUFACTURING COMP'Y,

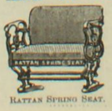
48 AND 50 NORTH SIXTH STREET, PHILADELPHIA, PA.,



Elastic Slat Seat.

REFERENCES.

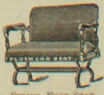
N. Y. C. & H. R. R. CO.
N. Y. ELEVATED R. R.
ILL. CENTRAL R. R.
PULLMAN P. C. CO.
PENN. R. R. CO.
N. Y. & N. ENG'D R. R.
BALT. & O. R. R.
AND ONE HUNDRED OTHERS.



Rattan Spring Seat.

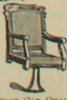
EXTENSIVE MAKERS OF

PATENTED CAR SEATS AND SPRINGS.



Spring Edge Seat.

ESTIMATES, CIRCULARS AND SAMPLES FURNISHED ON APPLICATION.



Parlor Car Chair

W. S. Gerrish, *Gen. Man*....Muskegon, Mich.
Lake Shore & Michigan So'n Ry.
4-8½ g. 1,340 m. 547 lo. 17,115 cars.
John Newell, *Gen. Man*..........Cleveland, O.
P. P. Wright, *Gen. Supt*..........Cleveland, O.
L. G. Higgins, *Pur. Agt*..........Cleveland, O.
G. W. Stevens, *Supt. M. P*........Cleveland, O.
John Kirby, *Gen. M. C. B*........Cleveland, O.
East'n Div.: C. B. Couch, *Supt*.....Cleveland, O.
J. S. Graham, *M. M*..........Buffalo, N. Y.
A. C. Robson, *M. C. B*..........Buffalo, N. Y.
L. O. Gassett, *M. M*..........Cleveland, O.
J. Withycombe, *M. C. B*..........Cleveland, O.
Frank. Div.: G. H. McIntire, *Supt*. Youngstown, O.
Toledo Div.: Thos. Flesher, Jr., *Supt*. Cleveland, O.
J. M. Sanborn, *M. M*..........Norwalk, O.
W. O. Smith, *M. C. B*..........Norwalk, O.
Mich. Divs.: J. E. Curtis, *Supt*..........Toledo, O.
Det. Brs.: T. J. Charlesworth, *Supt*. Detroit, Mich.
Lansing, Ypsilanti & Ft. Wayne Branches.
W. H. Caniff, *Supt*..........Hillsdale, Mich.
Western Div.: A. G. Amsden, *Supt*...Chicago, Ill.
W. L. Gilmore, *M. M*..........Elkhart, Ind.
Frank O. Bray, *M. C. B*..........Adrian, Mich.
Gr. Rap. Br.: M. E. Wattles, *Supt*. Kalamazoo, Mich.
Lake Tahoe R. R. 3 g. 10 m. 3 lo. 49 cars.
D. L. Bliss, *Gen. Man*..........Carson, Nev.
John T. Rogers, *Gen. Supt*.......Carson, Nev.
Geo. R. Lindsay, *M. M*..........Carson, Nev.
Leavenworth, Topeka & So. W'n Ry. (*See A. T. & S. F.*)
Lebanon Springs R. R. 4-8½ g. 58 m. 5 lo. 44 c.
W. C. Alstyne, *Gen. Man*..........Albany, N. Y.
W. H. Hawkins, *Pur. Agt*..........Albany, N. Y.
Geo. Tefft, *M. M*..........Chatham, N. Y.
Lehigh Valley R. R. 4-8½ g. 495 m. 392 lo. 36,998 c.
H. S. Goodwin, *Gen. Supt*.......Bethlehem, Pa.
W. C. Alderson, *Pur. Agt*.....Philadelphia, Pa.
John I. Kinsey, *M. M*..........So. Easton, Pa.
John S. Lentz, *M. C. B*..........Packerton, Pa.
N. J. Div.: Jas. Donnelly, *Supt*. Perth Amboy, N. J.
Coal Rds.: J. I. Blakeslee, *Supt*. Mauch Chunk, Pa.
D. Clark, *M. M*..........Hazleton, Pa.
John Campbell, *M. M*..........Delano, Pa.
B. M. Div.: A. G. Brodhead, *S*. Mauch Chunk, Pa.
P. Hofecker, *M. M*..........Weatherly, Pa.
Wy. Div.: A. Mitchell, *S. & M. M*. Wilkesbarre, Pa.
Pa. & N. Y.; and Geneva, Ithaca & Sayre R. Rs.
Wm. Stevenson, *Gen. Supt*..........Sayre, Pa.
J. N. Weaver, *M. M*..........Sayre, Pa.
Lehigh & Hudson River Ry. 4-8½ g. 63 m. 8 lo. 350 c.
Grinnell Burt, *Gen Man*..........Warwick, N. Y.
N. L. Furman, *Supt*..........Warwick, N. Y.
John Sayre, *Pur. Agt*..........Warwick, N. Y.
N. L. Furman, *Supt*..........Warwick, N. Y.
S. Mills, *M. M*..........Warwick, N. Y.
Lehigh & Lackawanna and Lehigh & Susquehanna R. Rs. (*See Phil. & Read.; N. J. Cen. Div.*)
Levis & Kennebec R. R. (*See Quebec Cen.*)
Ligonier Valley R. R. 4-9 g. 11 m. 2 lo. 22 cars.
Thos. A. Mellon, *Gen. Manager*... Pittsburg, Pa.
Geo. Senft, *Supt. & P. Agt*.......Latrobe, Pa.
Little Miami R. R. (*See Penna. Co.'s Rds.; (8) Div.*)
Little Rock, Miss. River & Texas Ry.
4-8½ g. 170 m. 12 lo. 299 cars.
H. Wood, *Gen Man*..........Little Rock, Ark.
F. A. Lister, *Gen. Supt*.......Little Rock, Ark.
F. Hufsmith, *M. M. & C. B*...Arkansas City, Ark.
Little Rock & Fort Smith. 4-8½ g. 170 m. 13 lo. 360 c.
Hy. Wood, *Gen. Man*..........Little Rock, Ark.
F. A. Lister, *Gen. Supt*.......Little Rock, Ark.
F. Hufsmith, *M. M. & M. C. B*.....Argenta, Ark.
Little Saw Mill Run R. R. 3 & 4-8½ g. 8 m. 4 lo. 327 c.
T. Hartley, *Gen. Man*..........Banksville, Pa.
Long Island R. R. 4-8½ g. 352 m. 92 lo. 953 cars.
I. D. Barton, *Gen. Supt*. Long Island City, N. Y.
Benj. Norton, *Pur. Agt*. Long Island City, N. Y.
C. A. Thompson, *M. M*. Long Island City, N. Y.
Longview & Sabine Valley R. R. (*See Gal. Sab. & St. L.*)
Louisiana W'n R. R. (*See Cen. Pac.; G., H. & S. A. Div.*)
Louisville, Cin. & Lexington R. R. (*See Louis. & N.*)
Louis., Evans. & St. L. Ry. 4-8½ g. 254 m. 24 lo. 1,032 c.
Geo. T. Evans, *Gen. Man*.......Louisville, Ky.
C. F. Dalton, *Gen. Supt*........Louisville, Ky.
F. P. Boatman, *M. M*..........Evansville, Ind.
Louisville, New Albany & Chicago Ry.
4-8½ g. 470 miles 56 lo. 3,700 cars.
John B. Carson, *Gen. Supt*.....Louisville, Ky.
H. O. Nourse, *Pur. Agt*..........Louisville, Ky.
Josiah Bettis, *M. M. & C. B*...New Albany, Ind.
C. C. F. Bent, *Supt. Trans*......Lafayette, Ind.
Louisville, New Orleans & Tex. Ry. 450 m. In progress.
R. T. Wilson, *Dir*. 2 Exchange Ct., New York.
Louisville & Nashville R. R.
5 g. 2,186 m. 380 lo. 12,197 cars.
Gen Man..........Louisville, Ky.
J. T. Harahan, *Gen. Supt*........Louisville, Ky.
W. P. Harris, *Supt*..........Louisville, Ky.
P. P. Huston, *Pur. Agt*..........Louisville, Ky.
Reuben Wells, *Supt. Mach*..... Louisville, Ky.
Louisv., Cin. & Lex. Divs.:
J. G. Metcalf, *Supt. Trans*......Louisville, Ky.
P. Leeds, *M. M*..........Louisville, Ky.
J. W. Luttrell, *M. M*..........Louisville, Ky.
J. G. Clifford, *M. M* (2d & C. Div.). Bowling Grn. Ky.
Henderson Div.: J. Geddes, *Supt*. Henderson, Ky.
W. P. Pike, *M. M*..........Nashville, Tenn.
Nash. & D. Div.: J. Geddes, *Supt*. Nashville, Tenn.
S. & N. A. Div.: *Supt*...Birmingham, Ala.
C. W. White, *M. M*........Birmingham, Ala.
Mob. & M.; N. Div. Pens. & Sel.; Sl. & Mont. R. Rs.:
M. S. Belknap, *Supt*..........Montgomery, Ala.
J. N. Hall, *M. M.* (Mont. Shops). Montgomery, Ala.
N. O. Div.: O. M. Dunn, *Supt*....New Orleans, La.
Wm. Adair, *M. M*..........Mobile, Ala.
Memp. Div.: W. Colcamp, *Supt*. Memphis, Tenn.
J. V. Slusser, *M. M*..........Memphis, Tenn.
St. L. Div.: C. O. Parker, *Supt*. Montgomery, Ala.
Thos. Walsh, *M. M*..........Mt. Vernon, Ill.
Pensacola and So. Div. Pens. & Selma Rds.:
E. O. Saltmarsh, *Supt*..........Pensacola, Fla.
W. D. Robb, *M. M*..........Pensacola, Fla.
Louisville & Wadley R. R. 5 g. 10 m. 1 lo. 5 c.
J. H. Wilkins, *Supt. & Pur. Agt*. Louisville, Ga.

M

Macon & Brunswick R. R.
(*See E. Tenn., Vir. & Ga.; At. & Ga. Divs.*)
Maine Central R. R. 4-8½ g. 465 m. 59 lo. 1,335 c.
Payson Tucker, *Gen. Man*........Portland, Me.
Ira K. Russell, *M. M*..........Waterville, Me.
C. H. Kenison, *M. C. B*..........Augusta, Me.
Eastern Maine. 3 g. 19 m. 2 lo. 40 c.
L. L. Lincoln, *Supt*..........Portland, Me.
Manchester & Keene R. R. 4-8½ g. 30 m. (*See Concord.*)
Manchester & Lawrence R. R. (*See Concord.*)
Manchester & North Weare R. R. (*See Concord.*)
Manhattan Ry. 4-8½ g. 32 m. 228 lo. 652 pass. c.
Frank K. Hain, *Gen. Man*.....New York, N. Y.
W. T. Goundie, *Supt. Trans*. .New York, N. Y.
T. W. Peeples, *M. M*..........New York, N. Y.
H. A. Webster, *M. C. B*........New York, N. Y.
Manhattan, Alma & Burlingame Ry. (*See A., T. & S. F.*)
Manitoba Southwestern Colonization Ry.
4-8½ g. 52 m. 3 lo. 125 cars.
J. M. Eagan, *Gen. Supt*.........Winnipeg, Man.
Chas. Newell, *M. M*..........Winnipeg, Man.
Marietta & Cincinnati R. R. (*See Cin. Wash. & Balt.*)
Marietta & North Georgia R. R. 3 g. 60 m. 3 lo. 7 c.
J. B. Glover, *Supt. & P. Agt*.....Marietta, Ga.
E. A. Withers, *M. M*..........Marietta, Ga.
Marquette, Houghton & Ontonagon R. R.
4-8½ g. 100 m. 42 lo. 2,530 cars.
Samuel Schoch, *Gen. Man*.....Marquette, Mich.
M. B. McGee, *Pur. Agt*.......Marquette, Mich.
W. A. Thompson, *M. M*.......Marquette, Mich.
H. D. Lyons, *M. C. B*.........Marquette, Mich.
Maryland Central R. R. 3 g. 27 m. 4 lo. 56 cars.
S. G. Boyd, *Supt*..........Baltimore, Md.
Marquette & Western.
D. McCool, *Gen. Supt*........Marquette, Mich.
W. J. Tench, *Pur. Agt*.......Marquette, Mich.
Massachusetts Central R. R. 4-8½ g. 48 m. 5 l. 81 c.
E. G. Allen, *Supt. & Pur. Agt*....Boston, Mass.
E. A. Walker, *M. M*..........So. Sudbury, Mass.
McComb, Deshler & Toledo R. R.
(*See Cin., Ham. & Day.; D. & M. Div*
Meadville Ry. (*See Penna. Co.'s Rds.; (2) Div.*)
Memphis & Charleston R. R. (*See E. Tenn. Va. & Ga.*)
Memphis & Lit. Rock R. R. 5 g. 135 m. 14 lo. 299 c.
R. Fink, *G. Man. & P. A*......Little Rock, Ark.
H. G. Fleming, *Supt*..........Memphis, Tenn.
Thos. Rennell, *M. M*..........Argenta, Ark.
T. Rennell, *M. C. B*..........Argenta, Ark.
Mexican Ry. 4-8½ g. 293 m. 42 lo. 616 cars.
E. W. Jackson, *Gen. Man*........Mexico, Mex.
Mexican Central Ry. 4-8½ g. 680 m. 73 lo. 818 c.
Theo. Nickerson, *Pur. Agt*......Boston, Mass.
D. B. Robinson, *Gen. Man*.......City of Mexico.
D. MacKenzie, *Gen. Supt*.......City of Mexico.
J. H. O'Brien, *M. M*..........City of Mexico.
G. T. Jarvis, *Div. Supt*.........City of Mexico.
J. H. Smith, *Div. Supt*..........Silao, Mex.
Wm. Davis, *Div. Supt*..........Jimulco, Mex.
E. E. Comfort, *Div. Supt*. Paso del Norte, Mex.
F. W. Johnstone, *Supt. R. S*....City of Mexico.
E. P. Simpson, *M. M*..........City of Mexico.
A. Hendee, *M. M*..........Calera, Mex.
C. F. Stewart, *M. M*..........Silao, Mex.
W. L. Wallace, *M. M*..........Jimulco, Mex.
J. G. McCuen, *M. M*..........Chihuahua, Mex.
San Blas Div.: C. E. Payne, *Supt*. San Blas, Mex.
1st Div.: G. T. Jarvis, *Supt*......City of Mexico.
2d Div.: J. H. Smith, *Supt*..........Silas, Mex.
3d Div.: Wm. Davis, *Supt*..........Jimulco, Mex.
4th Div.: R. E. Comfort, *Supt*. Paso Del Norte, Mex.
Mexican National Ry. 3 g. 766 m. 50 lo. 1,283 c.
Texas Mexican Ry. 3 g. 171 m. 10 lo. 212 c.
R. C. Peebles, *Supt*..........Mexico, Mex.
W. F. Baldwin, *Asst. Supt*..........Laredo, Tex.
Galv. Div. T. M. Ry.: M. Quin, *Supt*. Galveston, Tex.
No. Div. Mex. Nat. Ry. & So. Div. Tex.-Mex. Ry.
C. A. Merriam, *Supt*..........Laredo, Texas.
Tho. Milan, *M. M*.......Corpus Christi, Tex.
So. Div. M. N. Ry.: W. E. Lewis, *Supt*. Mexico, Mex.
J. M. Winslow, *M. M*..........Mexico, Mex.
Mat. Div.: F. E. Butterfield, *Supt*. Matamoras, Mex.
Mexican, Oriental, Inter-Oceanic & International R. R. 1,400 miles. In progress.
G. M. Dodge, *Pres*. 195 B'way, New York, N. Y.
Michigan Cen. R. R. 4-8½ g. 1,485 m. 357 lo. 11,284 c.
H. B. Ledyard, *Pres. & Gen. Man*. Detroit, Mich.
E. C. Brown, *Gen. Supt*..........Detroit, Mich.
Robert Miller, *Asst. Gen. Supt*...Detroit, Mich.
Allan Bourn, *Pur. Agt*..........Detroit, Mich.
S. H. Edgerly, *Gen. M. M*.......Jackson, Mich.
(1) Lines West of Detroit River:
E. C. Brown, *Gen. Supt*........Detroit, Mich.
East. Div.: D. S. Sutherland, *Supt*. Detroit, Mich.
Bay City, Saginaw & Mackinaw Divisions.:
W. A. Vaughan, *Supt*.........Bay City, Mich.
C. E. Smart, *M. M*..........Bay City, Mich.
Main Line: Gr. Rap.; So. Bend; and So. Hav. Divs.:
C. B. Bush, *Supt*..........Jackson, Mich.
W'n Divs.: R. H. L'Hommedieu, *Supt*. Chicago, Ill.
(2) Lines East of Detroit River:
Wm. H. Perry, *Agt*..........Buffalo, N. Y.
J. E. Morford, *Supt*..........St. Thomas, Ont.
A. Bull, *M. M*..........St. Thomas, Ont.
Rob't Potts, *M. C. B*..........St. Thomas, Ont.
Michigan & Ohio.
Luther Allen, *Supt*..........Toledo, O.
H. H. Mitchell, *Pur. Agt*..........Toledo, O.
D. J. Durrell, *M. M*..........Marshall, Mich.
Middleburg & Schoharie; and Schoharie Valley R. Rs. 4-8½ g. 11 m. 2 lo. 6 cars.
P. S. Danforth, *Gen. Supt*... Middleburg, N. Y.
Midland of Canada. (*See Grand Trunk.*)
Midland No. Carolina Ry. 5 g. 95 m. 9 lo. 82 cars.
Atlantic & North Carolina Ry. 22 m.
John D. Whitford, *Gen. Man*..Newbern, N. C.
J. A. Bryan, *Supt*..........Newbern, N. C.
D. J. Sprague, *Pur. Agt*.....New York, N. Y.
B. Manly, *Supt. of Mach*.......Newbern, N. C.
Milwaukee, Lake Shore & Western Ry.
4-8½ g. 370 m. 45 lo. 1,536 cars.
H. G. H. Reed, *Gen. Man. & P. Agt*. Milwaukee, Wis.
J. Donahue, *Supt*..........Milwaukee, Wis.
David B. Curtis, *Asst. Supt*..... Oshkosh, Wis.
John Hickey, *M. M*..........Ledyard, Wis.
Milwaukee & Northern and Wisconsin & Michigan R. Rds. 4-8½ g. 228 m. 24 l. 703 cars.
C. F. Dutton, *Gen. Supt*.......Milwaukee, Wis.
N. S. Kimball, *M. M*..........Ft. Howard, Wis.
Mineral Range R. R. 3 g. 13 m. 4 lo. 43 cars.
Chas. E. Holland, *Pr. & Supt*...Hancock, Mich.
W. H. Carr, *Pur. Agt*..........Hancock, Mich.
T. J. Shellhorn, *M. M. & C. B*..Hancock, Mich.
Minneapolis, Lyndale & Minnetonka Ry.
3 g. 20 miles 4 motors 1 lo. 35 cars.
William McCrory, *Man*.....Minneapolis, Minn.
T. W. Heintzelman, *M. M*.. Minneapolis, Minn.
Mississippi, Terre Aux Boeufs & Lake R. R.
29 miles.
M. R. Spelman, *Supt*..........New Orleans, La.
Mississippi & Tenn. R. R. 4-8½ g. 101 m. 12 lo. 194 c.
M. Burke, *Gen. Supt*..........Memphis, Tenn.
J. C. Ramsey, *M. M*..........Memphis, Tenn.
S. J. Bolton, *M. C. B*..........Memphis, Tenn.
Missouri, Kansas & Texas Ry. (*See Mo. Pac.; (2) Div.*)
Missouri Pacific Ry. (Leased and operated lines.)
4-8½ g. 6,029 m. 697 lo. 19,748 cars.
H. M. Hoxie, *3d V. Pres*..........St. Louis, Mo.
R. B. Lyle, *Pur. Agt*..........St. Louis, Mo.
(1), (2) and (3) Divs.:
John Hewitt, *Supt. M. P. & M*. ..St. Louis, Mo.
John Hodge, *Supt. Car Dep*.......St. Louis, Mo.
Frank Howard, *Asst. Supt. C. D*...Marshall, Tex.
(4), (5) and (6) Divs.:
O. A. Haynes, *S. M. P. & M*. ... Marshall, Tex.
(1) Missouri Pacific Ry. 1,028 m. 155 lo. 4,218 cars.
A. M. Hager, *Supt*..........Sedalia, Mo.
E. Taylor, *M. M*..........Sedalia, Mo.
W'n Div.: W. W. Fagan, *Supt*.....Atchison, Kan.
(2) Mo., Kan. & Tex. Ry. 1,308 m. 140 lo. 4,248 cars.
S. Irvin, *Asst. Supt. Car Dep*...... Sedalia, Mo.
J. B. Vandyne, *Supt*..........Parsons, Kan.
J. W. Haines, *M. M*..........Parsons, Kan.
(3) Central Branch Un. Pac. R. R. 388 m. 30 lo. 599 c.
W. W. Fagan, *Supt*..........Atchison, Kan.
H. V. Faries, *M. M*..........Atchison, Kan.
J. W. Blackburn, *A. Supt. Car D*..Atchison, Kan.
(4) St. L., I. Mt. & So'n Ry. 905 m. 138 lo. 4,928 c.
Wm. Kerrigan, *Supt*..........St. Louis, Mo.
St. Louis Div.: W. H. Harris, *M. M*..De Soto, Mo.
Ark. Div.: J. J. Frey, *Supt*.......Little Rock, Ark.
R. M. Richardson, *M. M*.....Little Rock, Ark.
(5) Int. & G. No.: John Herrin, *Supt*..Palestine, Tex.
W. S. Morris, *M. M*..........Palestine, Tex.
(6) Tex. & Pac.: W. Cummings, *Supt*. Marshall, Tex.
E. N. O. & Tr. Cont. Divs.:
Geo. Dimick, *Supt*..........Marshall, Tex.
E. A. Haggerty, *M. M*..........Marshall, Tex.
E. R. Smith, *M. M. & M. C. B*..N. Orleans, La.
Rio Grande Div.:
L. L. Keller, *Supt*..........Big Springs, Tex.
J. K. Lape, *M. M*..........Big Springs, Tex.
Mobile & Ala. Grand Trunk R. R. 5 g. 59 m. 2 lo. 23 c.
Wm. H. Pratt, *Trustee*..........Mobile, Ala.
Mobile & Girard R. R. 5 g. 84 m. 7 lo. 112 cars.
W. L. Clark, *Gen. Supt*..........Columbus, Ga.
J. C. Albrecht, *M. M*..........Columbus, Ga.
A. J. Nix, *M. C. B*..........Columbus, Ga.
Mobile & Montgomery Ry. (*See Louis. & Nash.*)
Mobile & Northwestern R. R. 3 g. 31 m. 2 lo. 16 c.
Thomas T. A. Lyon, *Pres*......Glendale, Miss.
Mobile & Ohio R. R. 5 g. 528 m. 75 lo. 1,353 cars.
G. Jordan, *V.-Pr. & Gen. Man*....Mobile, Ala.
F. Jordan, *Pur. Agt*..........Mobile, Ala.
M. T. Carson, *Gen. M. M*..........Whistler, Ala.
J. T. Booth, *M. C. B*..........Whistler, Ala.
So'n Div.: J. G. Motley, *Supt*..... Mobile, Ala.
L. J. Morris, *M. M*..........Macon, Miss.
No'n Div.: E. S. Hosford, *Supt*.. Jackson, Tenn.
H. C. Goode, *M. M*..........Jackson, Tenn.
Mobile & Spring Hill R. R. 5-2 g. 8 m. 1 lo. 16 cars.
F. Ingate, *Manager*..........Mobile, Ala.
Moline & Southeastern R. R. 3-6 g. 8 m. 2 lo. 26 c.
R. Battersly, *Gen. Man*.........Coal Valley, Ill.
Mont Alto R. R. 4-9 g. 21 m. 2 lo. 8 cars.
G. B. Wiestling, *Supt. & P. A*....Mont Alto, Pa.
Montgomery & Eufaula Ry. (*See Cen. of Ga.*)
Montgomery Southern Ry. 3 g. 20 m. 1 lo. 15 cars.
S. D. Hubbard, Jr., *Gen. Man*. Montgomery, Ala.
Montour R. R. 4-8½ g. 12 m. 2 lo. 130 cars.
C. R. Brown, *Supt. & Pur. Agt*...Imperial, Pa.
Henry Newman, *M. C. B*..........Imperial, Pa.
Montpelier & Wells Riv. R. R. 4-8½ g. 38 m. 3 lo. 86 c.
W. A. Stowell, *Supt*..........Montpelier, Vt.
Montreal Portland & Boston Ry. (*See Passumpsic.*)
Montreal Sorel Ry. 4-8½ g. 47 m. 3 lo. 35 c.
C. N. Armstrong, *G. M. & Pur. Agt*. Sorel, Que.
J. F. Armstrong, *Gen. Supt*..........Sorel, Que.
G. W. Pangborn, *M. M*..........Sorel, Que.
Montrose Ry. 3 g. 28 m. 3 lo. 24 cars.
T. G. Walter, *Gen. Supt*... Tunkhannock, Pa.
Morgan's Louis. & Tex. R. R. 4-8½ g. 242 m. 46 l. 1,339 c.
J. Kruttschnitt, *Supt*.........New Orleans, La.
C. Trumpy, *Pur. Agt*..........New Orleans, La.
J. D. Connell, *M. M*..........Algiers, La.
Jno. Hildebrand, *M. C. B*..........Algiers, La.
Mount Washington R. R. 5-3 g. 3 m. 6 lo. 6 cars.
Walter Aiken, *Gen. Man*........Franklin, N. H.
Muncy Creek Ry. (*See Wmspt. & No. Br.*)

N

Nantasket Beach R. R. 4-8½ g. 6 m. 5 lo. 25 c.
George L. Keyes, *Gen. Supt*......Boston, Mass.
Naugatuck R. R. 3 g. 4 m. 17 lo. 547 cars.
Geo. W. Beach, *Supt*.......Waterbury, Conn.
H. A. Bishop, *Pur. Agt*.....Bridgeport, Conn.
H'y D. Beach, *Supt. R. S*....Bridgeport, Conn.
Napanee, Tamworth & Quebec Ry. In progress.
Ed. W. Rathbun, *Man. Dir*....Deseronto, Ont.
R. C. Carter, *Supt*..........Deseronto, Ont.
Narragansett Pier R. R. 4-8½ g. 8 m. 2 lo. 11 c.
G. T. Lanphear, *Supt. & Pur. Agt*. Peacedale, R. I.
Nashua & Rochester R. R. (*See Wor. & Nash.*)
Nashville, Chattanooga & St. Louis Ry.
5 g. 539 miles 87 lo. 1,979 cars.
J. W. Thomas, *G. Man. & P. Agt*. Nashville, Tenn.
M. J. C. Wrenne, *Supt*..........Nashville, Tenn.
James Cullen, *M. M. & C. B*. .Nashville, Tenn.
Nashville & Florence R. R. 5 g. 20 m.
J. T. Craik, *Supt*..........Columbia, Tenn.
Natchez, Jackson & Col. R. R. 3-6 g. 100 m. 7 lo. 92 c.
E. D. Frost, *Gen. Supt*..........Natchez, Miss.
National Car Company. 4,000 freight cars.
L. Millis, *Pres*..........Boston, Mass.
F. Stewart Stranahan, *Sec. & Tr*. St. Albans, Vt.
John B. Fletcher, *Supt*.......St. Albans, Vt.
Nebraska, Topeka, Iola & Memphis R. R. 4-8½ g. 16 m.
H. M. Clarke, *Gen. Man*..........Girard, Kan.
C. H. Malin, *Gen. Supt*..........Girard, Kan.
Nevada Central R. R. (*See Union Pac.; (7) Div.*)
Nevada County N. G. R. R. 3 g. 23 m. 3 lo. 46 cars.
John F. Kidder, *Supt*.......Grass Valley, Cal.
Jas. McCormick, *M. M. & C. B*. Grass Valley, Cal.
Nevada & Oregon R. R. 3 g. 30 m. 25 cars.
D. W. Balch, *Supt*..........Reno, Nev.
New Brunswick Ry. 4-8½ g. 419 m. 20 lo. 357 cars.
E. R. Burpee, *Gen. Man*.....Woodstock, N. B.
Jesse Mathews, *M. M*..........Gibson, N. B.
T. N. Burpee, *M. C. B*....McAdam Junc., N. B.
J. J. Seely, *Pur. Agt*.........Woodstock, N. B.
Thos. Armstrong, *M. M*.... St. Andrew's, N. B.
G. Houlton, *M. C. B*........St. Andrew's, N. B.
New Brunswick & Can. Ry. (*See New Brun.*)
New Castle R. R. 3-6 g. 5 m. 2 lo. 76 cars.
Geo. Pearson, *Gen. Man*.......New Castle, Pa.
New Castle & Beaver Valley R. R. (*See Penna. Co.*)
New Haven & Derby R. R. 4-8½ g. 13 m. 4 lo. 70 c.
E. S. Quintard, *Supt*..........New Haven, Conn.
J. M. Whitlock, *M. M. & C. B*. New Haven, Conn.
New Haven & No'mpton. 4-8½ g. 170 m. 27 lo. 598 c.
S. B. Opdyke, Jr., *Supt*..........New Haven, Ct.
R. G. Curtis, *Pur. Agt*..........New Haven, Ct.
Henry Fox, *M. M*..........New Haven, Ct.
John Sweeny, *For Car. Shps*...New Haven, Ct.
New Jersey & New York Ry. 4-8½ g. 37 m. 6 lo. 40 c.
J. D. Hasbrouck, *Gen. Man* Jersey City, N. J.
J. S. Drake, *Supt. & M. M*......Hillsdale, N. J.
L. B. Van Wagonen, *M. C. B*....Hillsdale, N. J.
N. J. Southern Ry. (*See Phil. & Read.; N. J. So. Div.*)
New London Northern R. R. (*See Central Ver.*)
New Orleans, B. Rouge, Vicks. & Memphis.
Jas. M. Edwards, *Gen. Man*..New Orleans, La.
John Bradley, *Supt*..........New Orleans, La.
New Orleans Pacific Ry. (*See Mo. Pac.; (6) Div.*)
New Orleans & Carrollton R. R.
4-8½ g. 15 m. 12 lo. 79 cars.
C. V. Haile, *Supt*..........New Orleans, La.
John Dahmer, *M. M*..........New Orleans, La.
Jas. Thorn, *M. C. B*..........New Orleans, La.
New Orleans & Mobile R. R. (*See Louis. & Nash.*)
N. O. & Northeastern R. R. (*See Cin., N. O. & Tex. Pac.*)
New Orleans & Selma R. R. 5 g. 21 m. 1 lo. 8 cars.
L. B. Schofield, Supt..........Selma, Ala.
N. Y. Central & Hudson River R. R.
4-8½ g. 983 m. 676 lo. 25,161 cars.
J. M. Toucey, *Gen. Supt*...... New York, N. Y.
R. C. Moore, *Pur. Agt*........ New York, N. Y.
Wm. Buchanan, *Supt. M. P*... New York, N. Y.
L. Garey, *Supt. Car Dept*..... New York, N. Y.
N. Y. & Har. Div.: C. M. Bissell, *Supt*. do.
P. McQ. Gibson, *M. M*..........New York, N. Y.
C. E. Garey, *M. C. B*........Morrisania, N. Y.
Hud. Riv. Div.: C. M. Bissell, *Supt*. N. York, N. Y.
Peter Smith, *M. C. B*..........New York, N. Y.
E'n Div.: Zenas C. Priest, *Supt*......Utica, N. Y.
John Ortton, *M. M*........West Albany, N. Y.
L. Packard, *M. C. B*......West Albany, N. Y.
W'n Div.: Geo. H. Burrows, *Supt*. Rochester, N. Y.
S. L. White, *M. M*..........Syracuse, N. Y.
Amos Gould, *M. M*..........E. Buffalo, N. Y.
E. Chamberlain, *M. C. B*... E. Buffalo, N. Y.
C. H. Burchard, *M. C. B*..E. Rochester, N. Y.
Rd. Donaby, *M. C. B*....Niagara Falls, N. Y.
N. Y. Chic. & St. L. Ry. 4-8½ g. 513 m. 115 lo. 4,838 c.
Lewis Williams, *Gen. Man*..........Cleveland, O.
Jno. Mackenzie, *Supt. M. P*.......Cleveland, O.
Eas'tn Div.: G. H. Kimball, *Supt*...Cleveland, O.
E. A. Miller, *M. M*..........Conneaut, O.
West'n Div.: A. H. Evans, *Supt*......Chicago, Ill.
Jas. Eckford, *M. M*..........Bellevue, O.
New York City & Northern. 4-8½ g. 54 m. 17 lo. 368 c.
Frank S. Gannon, *Gen. Supt*. High Bridge, N. Y.
Tho. Millen, *M. M*.......... High Bridge, N. Y.
New York, Lackawanna & W'n Ry. (*See Del., L. & W.*)
New York, Lake Erie & Western R. R.
E. S. Bowen, *V. Pr*..........New York, N. Y.
(1) N. Y., L. E. & W. Div.: 4-8½ g. 1,073 m. 576 lo. 30,553 c.
B. Thomas, *Gen. Supt*........Jersey City, N. J.
J. A. Hardenburgh, *Pur. Agt*. New York, N. Y.
F. M. Wilder, *Supt. M. P. & M*...Susqueh'a, Pa.
E'n Div.: E. O. Hill, *Supt*......Jersey City, N. J.
J. H. Vreeland, *M. M*.......Jersey City, N. J.
J. N. Mileham, *M. C. B*.....Jersey City, N. J.
Del. Div.: W. J. Murphy, *Supt*..Port Jervis, N. Y.
J. Van Vechten, *M. M. & C. B*. Pt. Jervis, N. Y.
Susq. Div.: J. Jolls, *Supt*..........Elmira, N. Y.
V. Blackburn, *M. M*.......Susquehanna, Pa.
D. B. Goodell, *M. C. B*..........Elmira, N. Y.
Buf. & R. Divs.: Chas. Neilson, *Supt*.; and
G. B. Ross, *M. M*..........Buffalo, N. Y.
M. Wilder, *M. C. B*..........Buffalo, N. Y.
B. & S.-W. Div.: C. A. Brunn, *Supt*. do.
W'n Div.: W. B. Coffin, *Supt*..Hornellsville, N. Y.
Geo. H. Griggs, *M. M*......Hornellsville, N. Y.
N. Y. & Greenwood L. Ry. 4-8½ g. 44 m. 8 lo. 53 c.
Stephen Smith, *Supt*..........Jersey City, N. J.
F. A. Stinard, *M. M*..........Pompton, N. J.
(2) N. Y., Pa. & O. Div.: 4-8½ g. 565 m. 221 lo. 7,794 c.
J. M. Ferris, *Gen. Supt*.........Cleveland, Ohio.
J. H. Holway, *Pur. Agt*.........Cleveland, Ohio.
Wm. Fuller, *Gen. M. M. & C. B*...Cleveland, O.
S. V. Smith, *Asst. Gen. M. C. B*. ...Kent, Ohio.
E'n Div.: A. L. Dunbar, *Supt*.......Meadville, Pa.
J. A. Cooper, *M. M*..........Meadville, Pa.
D. S. Dockstader, *M. C. Rep*...Meadville, Pa.
W'n Div.: T. A. Phillips, *Supt*.......... Galion, O.
Wm Hill, *M. M*..........Galion, O.
J. W. Holmes, *For. Car Rep*.......Galion, O.
Geo. Wilson, *For. Car Rep*.... Dayton, Ohio.
Maho'g Div.: N. F. Wood, *Supt*......Cleveland, O.
N. Wright, *M. M*..........Cleveland, O.
C. N. Thorp, *M. C. Rep*..........Cleveland, O.
New York, New Haven & Hartford R. R.
4-8½ g. 203 m. 123 lo. 2,768 cars.
E. M. Reed, *V. P. & Gen. Man*..New Haven, Ct.
R. N. Dowd, *Pur. Agt*..........New Haven, Ct.
N. Y. & N. H. Div.: W. H. Stevenson, *Supt*...N. Y.
Shore Line and Air Line Divs.:
O. M. Shepard, *Supt*.......... N. Haven, Ct.
H. Kettendorf, *Supt. M. P*...New Haven, Ct.
Jas. Denver, *M. C. B*..........New Haven, Ct.
Hart. Div.: C. S. Davidson, *Supt*......Hartford, Ct.
John Henny, Jr., *Supt. M. P. & M. C. B*.... do.
N. Y., Ontario & Western Ry. (*See N. Y., W. Sh. & Buf.*)
N. Y., Pittsb'h & Chicago. 4-8½ g. 20 m. 2 lo. 32 c.
Geo. W. Dixon, *Supt*..........New Galilee, Pa.
H. T. Hanna, *Pur. Agt*..........Pittsburgh, Pa.
N. Y., Pennsylvania & Ohio R. R. (*See N. Y., L. E. & W.*)
New York, Philadelphia & Norfolk R. R.
4-8½ g. 10 m. 1 lo. 4 cars.
Jas. McConkey, *Supt*........Princess Ann, Md.
New York, Providence & Boston R. R.
4-8½ g. 83 m. 29 lo. 430 cars.
J. B. Gardner, *Supt*..........Providence, R. I.
Giles F. Ward, *Pur. Agt*......Stonington, Conn.
J. H. Anderson, *M. M. & C. B*. Providence, R. I.
N. Y., Susqueh'na & W'n. 4-9 g. 147 m. 33 lo. 1,469 c.
F. A. Potts, *Gen. Man*.........New York, N. Y.
C. D. McKelvey, *Asst. Supt*.. Jersey City, N. J.
C. T. Demarest, *Pur. Agt*.....New York, N. Y.
W. C. Ennis, *M. M. & C. B*...Wortendyke, N. J.
New York, Texas & Mexican Ry.
4-8½ g. 92 m. 6 lo. 95 cars.
Allen McCoy, *Gen. Man*..........Victoria, Tex.
J. G. Conlon, *M. M*..........Victoria, Tex.
New York, West Shore & Buffalo.
4-8½ g. 850 m. 98 lo. 2,907 c.
J. D. Layng, *Gen. Man*........New York, N. Y.
C. D. Gorham, *Gen. Supt*......Weehawken, N. J.
P. S. Bemis, *Pur. Agt*.........New York, N. Y.
R. H. Soule, *Supt. M. P*........Frankfort, N. Y.
H. R. Div.: C. W. Bradley, *Supt*.,
Weehawken, N. J.
Harry Linn, *M. M*.........New Durham, N. J.
Moh'k Div.: H. W. Gardiner, *Supt*. Syracuse, N. Y.
Buff. Div.: D. B. McCoy, *Supt*......Buffalo, N. Y.
New York, Ontario & Western.
J. E. Childs, *Gen. Supt*........New York, N. Y.
N. Y. Woodhaven & Rockaway R. R. (*See Long Is.*)
N. Y. & Greenwood Lake Ry. (*See N. Y., L. E. & W.*)
N. Y. & Manhattan Beach Ry. (*See Long Island.*)
New York & Long Branch R. R. (*See Phil. & Read.*)
New York & New England R. R.
4-8½ g. 473 m. 145 lo. 3,959 cars.
W. H. Turner, *Gen. Supt*..........Boston, Mass.
W. W. McKim, *Pur. Agt*..........Boston, Mass.
J. B. Henney, *Supt. M. P*..........Boston, Mass.
Geo. E. Boyden, *M. M*..........Norwood, Mass.
Elias E. Pratt, *M. C. B*..........Norwood, Mass.
East Div.: E. G. Allen, *Supt*........Boston, Mass.
Nor. Div.: P. St. M. Andrews, *Supt*...Norwich, Ct.
W. A. Stone, *M. M*..........Norwich, Ct.
Prov. Div.: L. W. Palmer, *Supt*..Providence, R. I.
Hfd. Div.: E. Holbrook, *Supt*.......Hartford, Ct.
E. M. Humstone, *M. M*..........Hartford, Ct.
West'n Div.: C. H. Platt, *Supt*.....Fishkill, N. Y.
Woons'kt Div.:
E. N. Tucker, *Supt*..........Needham, Mass.
New York & Sea Beach R. R. 4-8½ g. 6 m. 4 lo. 40 c.
C. W. Douglass, *Supt*.........Bay Ridge, N. Y.
W. A. Sheldon, *Supt*.........Bay Ridge, N. Y.
Newark, Somerset & Straitsville R. R. (*See B. & O.*)
Newburg, Dutchess & Conn. R. R. 4-8½ g. 59 miles.
C. L. Kimball, *Gen. Supt*.....Matteawan, N. Y.
W. G. Van Buskirk, *M. M. & C. B*.,
Dutchess Junction, N. Y.
Newfoundland Ry. 3-6 g. 45 m. 7 lo. 41 c.
C. X. Hobbs, *Gen. Man*........St. John's, N'f'd.
Norfolk Southern R. R. 4-8½ g. 74 m. 7 lo. 182 c.
M. K. King, *Gen. Man. & Pur. Agt*. Norfolk, Va.
J. S. Whitworth, *M. M. & C. B*....Norfolk, Va.
Norfolk & Ocean View Narrow Gauge R. R.
3 g. 8 m. 2 lo. 9 cars.
W. H. Taylor, *Pres*..........Norfolk, Va.
Norfolk & Western R. R. (*See Shenandoah Val.*)
North-Eastern R. R. of Ga. 5 g. 72 m. 2 lo. 20 cars.
H. R. Bernard, *Supt*..........Athens, Ga.
North-Eastern R. R. (S. C.) (*See Wil. & Wel.*)
North Pacific Coast R. R. 3 g. 84 m. 12 lo. 320 cars.
David Nye, *Gen. Supt*..........San Rafael, Cal.
W. F. Russell, *Pur. Agt*....San Francisco, Cal.
E. L. Reese, *M. M*..........Saucelito, Cal.
North Shore Ry. 4-8½ g. 209 m. 21 lo. 564 c.
W. Wainwright, *Gen. Man*.....Montreal, Can.
A. Davis, *Supt. & Pur. Agt*......Quebec, Can.
Northern (N. H.), and Concord & Claremont Rys.
4-8½ g. 173 m. 25 lo. 569 cars.
Geo. E. Todd, *Supt*..........Concord, N. H.
M. M. & C. B. & Pur. Agt.. do.
Northern (N. J.) R. R. (*See N. Y., L. E. & W'n.*)
Northern Central Ry. (*See Penna. R. R. (6) Div.*)
North'n Pacific R. R. 4-8½ g. 2,207 m. 391 lo. 9,897 c.
T. F. Oakes, *Gen. Man*..........St. Paul, Minn.
John H. Ames, *Gen. Pur. Agt*..St. Paul, Minn.
Geo. W. Cushing, *Supt. M. P., M. & R. S*. do.
J. C. Barber, *M. C. B*..........Brainerd, Minn.
(1) E'n Div.: J. T. Odell, *A. Gen. Man*. St. Paul, Minn.
H. J. Small, *A. S. Mach*.......Brainerd, Minn.
1st Gr. Div.: M. C. Kimberly, *Supt*. Brainerd, Minn.
Frank Howard, *M. C. B*......Brainerd, Minn.
2d Gr. Div.: J. M. Graham, *Supt*. Jamestown, Dak.
C. C. Quinn, *M. M*..........Fargo, Dak.
A. Bardsley, *M. M*..........Mandan, Dak.
F. Greene, *A. Supt*..........Mandan, Dak.
3d Gr. Div.: S. R. Ainslie, *Supt*.. Glendive, Mont.
S. L. Bean, *M. M*..........Glendive, Mont.
J. C. Munro, *M. M*..........Livingston, Mont.
(2) W'n Div.: J. M. Buckley, *Asst. Gen. Man*.
New Tacoma, W. T.
H. D. Sanborn, *P. Agt*..........Portland, Ore.
W. T. Small, *A. S. Mach*.......Portland, Ore.
4th Gr. Div.: J. B. Cable, *Supt*...Missoula, Mont.
Jas. Walsh, *M. M*..........Missoula, Mont.
J. Evans, *M. M*..........Sprague, W. T.
5th Gr. Div.: Otis Sprague, *Supt*...Tacoma, W. T.
H. H. Warner, *M. M*..........Tacoma, W. T.
Northern & North-W'n Rys. 4-8½ g. 378 m. 50 lo. 1,195 c.
James Webster, *Supt*..........Toronto, Can.
W. C. Schreeber, *Pur. Agt*.......Toronto, Can.
P. Clarke, *M. M*..........Toronto, Can.
Nova Scotia Ry. 4-8½ g. 79 m. 9 lo. 268 c.
C. A. Scott, *Gen. Man*.....New Glasgow, N. S.
M. F. Punch, *M. M*.......New Glasgow, N. S.

O

Ogdensburg & Lake Champlain R. R.
4-8½ g. 122 m. 33 lo. 1,694 cars.
A. A. Gaddis, *Gen. Man*......Ogdensburg, N. Y.
E. B. Burnham, *Pur. Agt*...Ogdensburg, N. Y.
Abr. Klohs, *Supt. & M. M*........Malone, N. Y.
J. N. Brown, *Master Builder*. Ogdensburg, N. Y.
Ohio Central R. R. 4-8½ g. 325 m. 46 lo. 4,760 cars.
John E. Martin, *Rec*..........Toledo, O.
T. M. Peelar, *Supt*..........Bucyrus, O.
F. W. Stewart, *Pur. Agt*..........Toledo, O.
J. B. Morgan, *M. M. & C. B*........Bucyrus, O.
Ohio Southern R. R. (*See Ind., Bloom. & W'n.*)
Ohio & Mississippi Ry. 4-9 g. 616 m. 113 lo. 2,501 cars.
W. W. Peabody, *Pres. & Gen. Man*. Cincinnati, O.
G. E. Atwood, *Pur. Agt*.........Cincinnati, O.
J. H. Setchel, *Gen. M. M*..........Cincinnati, O.
Cin. Div.: C. B. Cole, *Supt*..........Seymour, Ind.
E. E. Jenks, *A. Gen. For*......Seymour, Ind.
J. P. Coulter, *M. C. B*..........Aurora, Ind.
Arthur Donaldson, *M. M*......Vincennes, Ind.
St. L. & Sp. Div.: C. M. Stanton, *Supt*. St. Louis, Mo.
J. W. Stokes, *M. M.* (Spring. Div.)..Pana, Ill.
Louisv. Div.: C. B. Cole, *Supt*. .Louisville, Ky.
Oil City & Chicago R. R. (*See Buff., N. Y. & Phil.*)
Old Colony R. R. 4-8½ g. 470 m. 124 lo. 3,527 cars.
J. R. Kendrick, *Gen. Man*.........Boston, Mass.
R. W. Husted, *Pur. Agt*..........Boston, Mass.
Jas. N. Lauder, *Supt. R. S*...... Boston, Mass.
Sam. Stevens, *S. Br. & Bld'gs*....Boston, Mass.
Main Li. Div.: J. H. French, *Supt*...Boston, Mass.
C. Berkley Powell, *M. M*..........Boston, Mass.
Cape Cod Div.: C. H. Nye, *Supt*..Hyannis, Mass.
C. Berkley Powell, *M. M*..........Boston, Mass.
No. Div.: S. A. Webber, *Supt*....Fitchburg, Mass.
F. M. Twombly, *M. M*.......... Taunton, Mass.
Oregon Ry. & Navigation Co.
3 & 4-8½ g. 577 m. 72 lo. 1,611 cars.
C. H. Prescott, *V. P. & Gen. Man*. Portland, Ore.
F. T. Dodge, *Supt*. (Riv. Div.)....Portland, Ore.
H. S. Rowe, *Supt*. (Ry Div.)......Portland, Ore.
J. M. Drake, *Pur. Agt*.......... Portland, Ore.
Goodall, Perkins & Co., *Supt*. (Ocean Div.)
San Francisco, Cal.
C. C. Hobart, *Gen. M. M*.......The Dalles, Ore.
Chas. A. Phipps, *M. C. B*..... The Dalles, Ore.
Oregon & California R. R. 4-8½ g. 449 m. 43 lo. 626 c.
R. Koehler, *Gen. Man*..........Portland, Ore.
J. Brandt, *Gen. Supt*..........Portland, Ore.
A. Brandt, *M. M*..........Portland, Ore.
Owensboro & Nashville R. R. 5 g. 44 m. 3 lo. 70 c.
M. Newbold, *Supt*..........Owensboro, Ky.
H. M. Gabel, *M. M. & C. B*....Owensboro, Ky.
Oxford & Henderson R. R. 4-8½ g. 13 m. 2 lo. 11 c.
James A. White, *Gen. Supt*...Henderson, N. C.

Goodell & Waters

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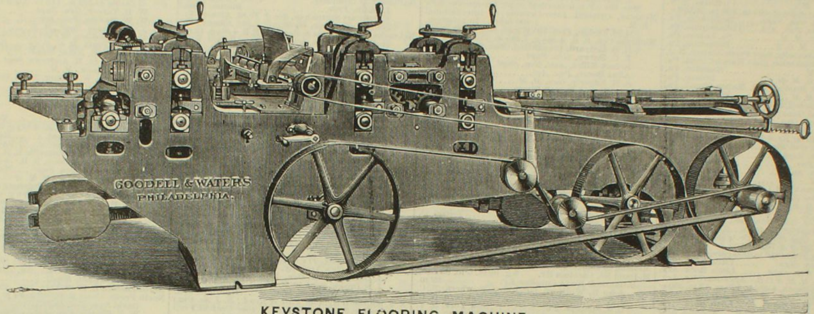
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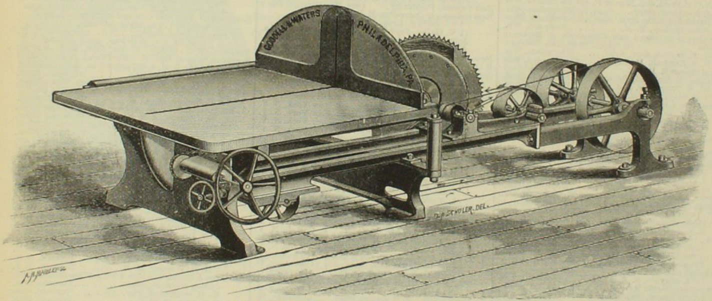
KEYSTONE FLOORING MACHINE.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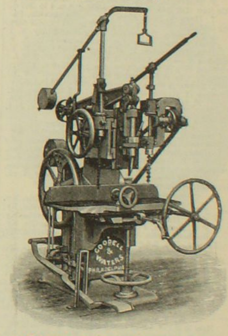
LARGE TRAVERSE CUT-OFF SAW.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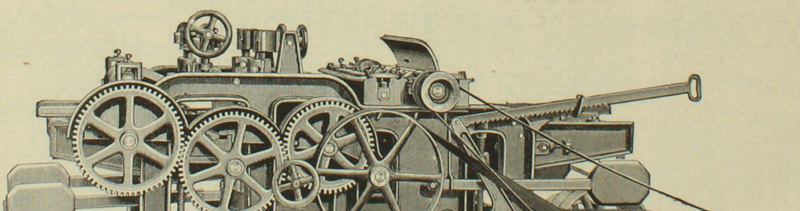
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31st and Chestnut Streets, - - - - PHILADELPHIA, PA.

James E. Lawrence, *M. M*....Henderson, N. C

P

Pacific Coast Ry. 3 g. 64 m.
J. M. Fillmore, *Manager*. San Luis Obispo, Cal.
W. H. Masterman, *M. M. & C. B.* do.
Painesville & Youngstown Ry. 3 g. 65 m. 7 lo. 319 c.
R. K. Paige, *Rec. & Man*........Painesville, O.
J. A. Newcome, *Supt. R. S*......Painesville, O.
Panama R. R. 5 g. 48 m. 14 lo. 2,200 cars.
G. A. Burt, *Gen. Supt*..... Aspinwall, U. S. Col.
E. Z. Penfield, *Pur. Agt*.......New York, N. Y.
Jas. Reilly, *M. M*..........Aspinwall, U. S. Col.
Passumpsic R. R. 4-8½ g. 147 m. 28 lo. 1,101 cars.
E. Raymond, *Pres. & Pur. Agt*..Boston, Mass.
H. E. Folsom, *Supt*...........Lyndonville, Vt.
L. L. Brigham, *M. M*........Lyndonville, Vt.
L. F. Woodard, *M. C. B*.......Lyndonville, Vt.
Paulding & Cecil Railway. 4-8½ g. 7 m. 3 lo. 28 c.
S. Frank Eagle, *Pres*..................Cecil, O.
Paw Paw and Toledo & South Haven R. Rds.
3 g. 20 m. 3 lo. 16 cars.
John Ihling, *Supt*..................Lawton, Mich.
Peach Bottom R. R. 3 g. 55 m. 6 lo. 52 cars.
B. B. Newton, *Supt. & Pur. Agt*...Oxford, Pa.
E. H. Williams, *M. C. B*...............York, Pa.
W. P. Kirk, *M. M*....................Oxford, Pa.
Pemigewasset Valley R. R. 4-8½ g. 21 m. 2 lo. 127c.
J. Thomas Vose, *Pres*........ Boston, Mass.
Pennsylvania Co.'s (5) Roads.
4-9 g. 3,222 m. 920 lo. 32,809 cars.
Gen. Divs. (1), (2), (3), (4) and (5).
Wm. A. Baldwin, *Gen. Man*.....Pittsburg, Pa.
John Thomas, *Gen. Supt*...... Pittsburg, Pa.
Wm. Mullins, *Gen. Pur. Agt*......Pittsburg, Pa.
Joseph Wood, *Supt. M. P*.... .Fort Wayne, Ind.
(1) Pittsburg, Ft. Wayne & Chicago Ry.
4-9 g. 468 m. 288 lo. 8,023 cars.
E'n Div.: A. B. Starr, *Supt*.......Allegheny, Pa.
Geo. J. Parkin, *M. M*.........Allegheny, Pa.
D. M. Peppard, *M. M*......... Crestline, O.
W'n Div.: C. D. Law, *Supt*.....Ft. Wayne, Ind.
F. D. Casanave, *M. M*........Ft. Wayne, Ind.
A. H. Somers, *Gen. For. Shops*...Chicago, Ill.
(2) Ashtabula & Pittsburg, and
(3) Erie & Pittsburg R. Rds. 221 m. 29 lo. 1,362 c.
John M. Kimball, *Supt*..Lawrence Junc., Pa.
J. A. Wood, *Gen. For. Shops*........Erie, Pa.
(4) Cleveland & Pittsb'g R. R. 225 m. 97 lo. 3,534 c.
R. F. Smith, *Asst. Man*..........Cleveland, O.
Philip Bruner, *Supt*.............Wellsville, O.
W. F. Beardsley, *Mast. of Mach*. Wellsville, O.
(5) Nc-W'n Ohio Ry.: J. S. Morris, *Supt*...Toledo, O.
Pennsylvania R. R. Co.'s Roads. (7 Gen. Divs.)
4-9 g. 3,158 m. 1,459 loco. 66,816 cars.
Chas. E. Pugh, *Gen Man*......Philadelphia, Pa.
Enoch Lewis, *Pur. Agt*.......Philadelphia, Pa.
John Reilly, *Supt. Trans*......Philadelphia, Pa.
T. N. Ely, *Gen S. M. P*..............Altoona, Pa.
1) Pennsylvania R. R. Divs.
4-9 g. 1,213 m. 705 lo. 46,819 cars.
S. M. Prevost, *Gen Supt*. ... .Altoona, Pa
Frank L. Sheppard, *Supt. M. P*..Altoona, Pa.
G. W. Strattan, *M. M*.. ....Altoona, Pa.
Jno. P. Levan, *Gen. Fore*... ....Altoona, Pa.
Phila. Div.: Tho. Gucker, *Supt*. Philadelphia, Pa.
H. D. Garrett, *M. M*....W. Philadelphia, Pa.
I. W. Van Houten, *Gen. For*....W. Phila., Pa.
Mid. Div.: O. E. McClellan, *Supt*. Harrisburg, Pa.
E. L. Caum, *M. M*............Harrisburg, Pa.
Samuel W. Myers, *Gen. For*. Harrisburg, Pa.
Altoona Div.: Jas. Reed, *Supt*.......Altoona, Pa.
Pitts. Div.: Robert Pitcairn, *Supt*....Pittsburg, Pa.
D. O. Shaver, *M. M*.............Pittsburg, Pa.
J. G. Stewart, *Gen. For*........Pittsburg, Pa.
W. Pa. Div.: A. P. Kirtland, *Supt*. Blairsville, Pa.
Wm. B. Norris, *M. M*..........Blairsville, Pa.
M. H. Falls, *Gen. For*..........Blairsville, Pa
Fred. Div.: J. B. Hutchinson, *Supt*.....York, Pa
Tyrone Div.: S. S. Blair, *Supt*.........Tyrone, Pa.
Lew. Div.: Wm. M. Phillips, *Supt*. Lewistown, Pa.
Bed. Div.: R. L. Holliday, *Supt*......Bedford, Pa.
Monong. Div.: David M. Watt, *Supt*. Pittsburg, Pa.
Wm. Lininger, *M. M*...........Pittsburg, Pa
(2) United R. Rs. of N. J. Divs. 471 m. 330 lo. 4,041 c.
F. Wolcott Jackson, *Gen. St*..Jersey City, N. J.
H. S. Hayward, *Supt. M. P*...Jersey City, N. J.
David H. Baker, *Gen. For*....Jersey City, N. J.
N. Y. Div.: Robt. E. Pettit, *Supt*. Jersey City, N. J.
L. A. Bosdevex, *M. M*. ..Jersey City, N. J.
E. F. Bosdevex, *Gen. For*..Jersey City, N. J.
Belv. Div.: J. A. Anderson, *Supt*. Lambertv., N. J.
R. McDowell, *M. M*.......Lambertville, N. J.
Amboy Div.: I. S. Buckalew, *Supt*. Camden, N. J.
Thos. Kerr, *M. M*....... ....So. Amboy, N. J.
P. S. Bogart, *Gen. For*......So. Amboy, N. J.
(2½) Camden & At. Rd.: 75 m. 18 l. 261 c.
W. N. Bannard, *Supt*...................and
Rufus Hill, *M. M*.. ....Camden, N. J.
Samuel Wills, *M. C. B*...... ..Camden, N. J.
(3) West Jersey R. R. 4-9 g, 188 m. 27 lo. 294 cars.
Joseph Crawford, *Gen. Supt*.....Camden, N. J.
W. McAlister, *M. M*.... ....Camden, N. J.
C. C. Williams, *Gen. For*........Camden, N. J.
(4) Phila., Wilm. & Balt. R. R. 409 m. 128 lo. 1,882 c.
H. F. Kenney, *Gen. Supt*. ....Philadelphia, Pa.
J. M. Wallis, *S. M. P*. ....Philadelphia, Pa.
H. D. Gordon, *M. M*.........Wilmington, Del.
W. H. Lungren, *M. C. B*......Wilmington, Del.
Cen. Div.: L. K. Lodge, *Supt*......... Media, Pa.
Del. Div.: I. N. Mills, *Supt*......Wilmington, Del.
Md. Div.: H. H. Carter, *Supt*..Wilmington, Del.
5) Phila. & Erie R. R. Divs.: 437 m. 110 lo. 3,089 c.
R. Neilson, *Gen. Supt*.... ...Williamsport, Pa.
A. O. Dayton, *Supt. Mo. Po*..Williamsport, Pa.
E'n. Div.: E. B. Westfall, *Supt*. Williamsport, Pa.
Sun. H. & W. Div: A. Walter, *Supt.*; and
H. K. Stout, *M. M*.... ... .Sunbury, Pa.
Mid. Div.: Tho. A. Roberts, *Supt*.....Renovo, Pa.
Wm. L. Holman, *M. M*..........Renovo, Pa.
West'n Div.: J. W. Reynolds, *Supt*.....Erie, Pa.
W. T. Smith, *M. M*.............. ...Erie, Pa.
6) Northern Central Ry. 4-9 g. 346 m. 152 lo. 6,610 c.
Robert Neilson, *Gen. Supt*...Williamsport, Pa.
A. O. Dayton, *Supt. M. P*....Williamsport, Pa.
A. W. Sumner, *Pur. Agt*... ....Baltimore, Md.
J. M. Coale, *M. M*...............Baltimore, Md.
G. W. Demarest, *Gen. For*......Baltimore, Md.
Susq. Div.: E. B. Westfall, *Supt*. Williamsport, Pa.
Sham. Div.: A. Walter, *Supt*..... ..Sunbury, Pa.
Elm. & Can. Divs.: S. Meade, *Supt*..Elmira, N. Y.
Jas. Strode, *M. M*..... .. ..Elmira, N. Y.
J. C. Dyott, *Gen. For*......... ....Elmira, N. Y.
Baltimore Div.: H. W. Kapp, *Supt*. Baltimore, Md.
(7) Balt. & Pot. & Alex. & Fred. 125 m. 30 lo. 360 c.
H. F. Kenny, *Gen. Supt*......Philadelphia, Pa.
A. W. Sumner, *Pur. Agt*........Baltimore, Md.
J. M. Wallis, *Supt. Mo. Po*....Philadelphia, Pa.
H. D. Gordon, *M. M*........ .Wilmington, Del.
J. Lescallett, *For. Mach. Shop*. Washington, D. C.
R. F. Downs, *For. Car Shop*..Washington, D. C.
Penn. Coal Co.'s R. R. 4-3 g. 67 m. 23 eng. 3,271 c.
J. B. Smith, *Gen. Supt*. ....Dunmore, Pa
And. Crane, *M. M*. ....Dunmore, Pa.
Geo. W. Simpson, *M. C. B*........Dunmore, Pa.
Pennsylvania, Slatington & New England R. R.
In progress. 4-8½ g. 18 m. 1 lo. 20 cars.
C. H. Stanton, *Supt*........... New York, N. Y.
Pennsylvania & Erie R. R.—Early Branch.
C. R. Early, *Gen. Supt*...........Ridgeway, Pa.
Pensacola & Atlantic R. R. 5 g. 161 m. 9 lo. 67 cars.
W. D. Chipley, *Gen. Supt*.......Pensacola, Fla.
W. D. Robb, *M. M*.............. .Pensacola, Fla.
Pensacola & Perdido R. R. 5 g. 10 m. 5 lo. 92 cars.
B. F. Simmons, *Pr. & Supt*.... Pensacola, Fla.
H. W. Simmons, *Pur. Agt*......Pensacola, Fla.
J. C. Schutte, *M. M*.............Pensacola, Fla.
People's Ry. 4-8½ g. 15 m. 2 lo. 14 cars.
W. D. Pollard, *Supt*....... ......Pottsville, Pa.
Peoria, Decatur & Evansville Ry.
4-8½ g. 254 m. 30 lo. 1,660 cars.
G. L. Bradbury, *Gen. Man*.... .... Peoria, Ill.
P. Reilly, *M. M*.....................Mattoon, Ill.
Peoria & Farmington R. R. (*See Cen. Ia.*)
Peoria & Pekin Union Ry. 4-8½ g. 20 m. 12 lo. 106 c.
Thos. B. Burnett, *Gen. Supt. & P. A*. Peoria, Ill.
R. F. Hurd, *M. M. & C. B*.. ......Peoria, Ill.
Perkiomen R. R. 4-8½ gauge 39 miles.
D. B. Clack, *Supt*.....Perkiomen Junction, Pa.
H. Boyd, *Pur. Agt*.............Norristown, Pa.
Petersburg R. R. 4-8½ g. 64 m. 10 lo. 133 cars
R. M. Sully, *Gen. Supt*.........Petersburg, Va.
Geo. F. Jones, *Pur. Agt*.... ...Petersburg, Va.
R. B. Andrews, *M. M*..... .....Petersburg, Va.
J. W. Fleming, *M. C. B*.........Petersburg, Va.
Phila., Wilmington & Balt. R. R. (*See Penna. R. R.*)
Peterborough & Hillsborough. (*See Northern, N. H.*)
Philadelphia, Newtown & New York R. R.
4-8½ g. 23 m.
W. M. Geary, *Supt*............Philadelphia, Pa.
Phila. & Atlantic City Ry. 3-6 g. 55 m. 11 lo. 134 cars.
F. S. Urie, *Supt*................Philadelphia, Pa.
W. S. Wilson, *Pur. Agt*.......Philadelphia, Pa.
H. M. Messimer, *M. M*..... ......Camden, N. J.
E. Lippincott, *M. C. B*.... ......Camden, N. J.
Philadelphia & Erie R. R. (*See Penna. R. R.; (5) Div.*)
Philadelphia & Reading R. R. (and Branches.)
4-8½ g. 1,582 m. 907 lo. 56,775 cars.
John E. Wootten, *Gen. Man*..Philadelphia, Pa.
W. S. Wilson, *Pur. Agt*......Philadelphia, Pa.
Geo. Eltz, *Supt. Trans*.. .... Reading, Pa.
L. B. Paxson, *Eng. of Mach*...... Reading, Pa.
No. Pa. & Bound Brook Div.:
I. A. Sweigard, *Supt*........Philadelphia, Pa.
Mahanoy & Shamokin and other Brs.:
J. H. Olhausen, *Supt*...........Pottsville, Pa.
D. C. Reinhart, *Asst. Supt*. ...Catawissa, Pa.
A. A. Hesser, *Asst. Supt*. Mahanoy Plane, Pa.
Schuylkill & Susquehanna Br.:
H. H. Tracy, *Supt*..... . ....Pine Grove, Pa.
Reading & Columbia Br.:
A. M. Wilson, *Supt*......... ...Columbia, Pa.
(2) N. J. Central Div.:
W. W. Stearns, *Supt*..... .....Elizabeth, N. J.
W. Woodcock, *M. M*.. ......Elizabethport, N. J.
Geo. Hackett, *M. C. B*. ....Elizabethport, N. J.
C. G. Williams, *M. M*.........Jersey City, N. J.
John Alpaugh, *M. M*.........Phillipsburg, N. J.
L. Br. Div.: H. H. Nieman, *Supt*..Long Branch, N. J.
N. J. So. Div.: R. Blodgett, *Supt* ...Manchester, N. J.
Wm. Montgomery, *M. M*....Manchester, N. J.
Chas. N. Sawyer, *M. C. B*....Manchester, N. J.
Lehigh & Susquehanna Div.:
W. S. Polhemus, *Supt*. ...Mauch Chunk, Pa.
Pittsburg, Bradford & Buffalo Ry. (*See Pitts. & West.*)
Pittsburg, Chartiers & Youghiogheny R. R.
4-8¾ g. 19 m.
Geo. S. Griscom, *Gen. Man*......Pittsburg, Pa.
Pittsburgh, Cincinnati & St. Louis Ry. (5 Gen. Divs.)
4-9 g. 916 m. 239 lo. 7,133 cars.
James McCrea, *Manager*.........Columbus, O.
Wm. Mullins, *Pur. Agt*.... ...Pittsburg, Pa.
Edward B. Wall, *Supt M. P*.......Columbus, O.
(1) P., C. & St. L. Div.: E. B. Taylor, *Supt*. Pittsburg, Pa.
C. B. Street, *M. M*.. ....Dennison, O.
J. M. Copeland, *G. F. Car Shops*. Steubenville, O.
2) C. & M. V. Div.: W. F. Black *Supt*..Zanesville, O.
Leroy Kells, *M. M*.. ....Lancaster, O.
Wm. Meikle, *Gen. For*......... Lancaster, O.
Daniel Jewell, *Gen. F. Car Shops*. Lancaster, O.
(3) Li. Mi. Div.: Ralph Peters, *Supt*....Cincinnati, O.
Leroy Kells, *M. M*..............Cincinnati, O.
Jos. Underwood, *G. F. Car Shops*. Cincinnati, O.
(4) J. M. & I. R. R.: E. W. McKenna, *Supt*. Louisville, Ky.
Wm. Swanston, *M. M*. ...Jeffersonville, Ind.
Edw. Austin, *G. F. C. Shops*. Jeffersonville, Ind.
(5) Indianapolis & Vincennes R. R.
J. J. Turner, *Supt*........Indianapolis, Ind.
Pittsburgh, Cleveland & Toledo R. R.
4-8¾ g. 78 m. 18 lo. 525 cars.
C. H. Andrews, *Pres*...........Youngstown, O.
W. C. Agnew, *Supt*.............Youngstown, O.
W. F. Hofecker, *M. M*... ...Youngstown, O.
Pittsburg, Ft. Wayne & Chicago Ry. (*See Penna. Co.*)
Pittsburg Southern Ry. (*See Balt. & O.*
Pitts. & Castle Shannon R. R. 3-4 g. 9 m. 5 lo. 428 c.
James M. Bailey, *Gen. Supt*.... Pittsburg, Pa.
Holmes Ward, *M. M*.......Castle Shannon, Pa.
Wm. E. Long, *M. C. B* .... Pittsburg, Pa.
Pitts. & Lake Erie R. R. 4-8¾ g. 70 m. 31 lo. 1,820 c.
W. C. Quincy, *Gen. Man*.........Pittsburg, Pa.
R. W. Jones, *Mast. Trans*.......Pittsburg, Pa.
S. W. Haines, *M. M* ....Pittsburg, Pa.
Pittsburgh, McKeesport & Youghiogheny.
4-8¾ g. 57 m. 19 lo. 267 cars.
W. C. Quincy, *Gen. Man*...... Pittsburgh, Pa.
R. W. Jones, *M. of Trans*......Pittsburgh, Pa.
S. W. Haines, *M. M*...........Pittsburgh, Pa.
Pitts. & Western R. R. 3 & 4-8½ g. 110 m. 18 lo. 365 c.
Pitts., Bradford & Buff. Ry. 3 g. 93 m. 8 lo. 163 c.
Tho. M. King, *Gen. Man*.........Allegheny, Pa.
J. T. Johnson, *Supt*.... ....Allegheny, Pa.
N. Bruce, *Pur. Agt*. ....Allegheny, Pa.
W. M. Flahavhan, *M. M*.........Allegheny, Pa
Pontiac, Oxford & Pt. Austin R. R. 100 m.
Geo. W. Debevoise, *Pr. & Gen. Man*. Oxford, Mich.
Jas. Houston, *Gen. Supt*....... ..Oxford, Mich.
Port Huron & No.-Western Ry. 3 g. 218 m. 14 lo. 288 c.
H. McMorran, *G. Man. & P. A*. Port Huron, Mich.
J. R. Wadsworth, *Supt*.. ...Port Huron, Mich.
Chas. Deifenbach, *M. M*.....Port Huron, Mich.
Benj. Hillier, *M. C. B*.........Port Huron, Mich.
Port Jervis & Monticello R. R. 4-8½ g. 24 m. 3 lo. 13 c.
M. V. Heller, *Gen. Man*......Port Jervis, N. Y.
Port Royal & Augusta Ry. 5 g. 180 m. 16 lo. 310c.
J. N. Bass, *Supt*......................Augusta, Ga.
T. F. Warwick, *M. M. & M. C. B*. Augusta, Ga
Portland & Ogdensburg. 4-8½ g. 110 m. 11 lo. 311 c.
J. Hamilton, *Gen. Supt. & P. A*..Portland, Me.
M. M....... ....Portland, Me.
W. G. Brewer, *M. C. B*... . ....Portland, Me.
Portland & Rochester R. R. 4-8½ g. 52 m. 7 lo. 230 c.
J. W. Peters, *Supt. & Pur Agt*..Portland, Me.
E. H. C. Tompson, *For. of Mach*..Portland, Me.
David Dow, *For. of Car Repairs*. Portland, Me
Potomac, Fred.'g & Pied. R. R 3 g. 38 m 2 lo. 38 c.
Will M. Grafton, *Supt*.... ..Fredericksburg, Va.
W. J. Sweigard, *M. M* ....Fredericksburg, Va.
Pough., Hart. & Bos. R. R. 4-8½ g. 45 m. 4 lo. 65 c.
J. A. Perkins, *Supt*........Poughkeepsie, N. Y.
John L. Donaldson, *M. M*. Poughkeepsie, N. Y.
Pratt Coal & Coke Company's R. R. 5 g. 9 m. 5 lo. 100 c.
W. L. Gude, *Gen. Man*........Pratt Mines, Ala.
Prescott & Thirty-Fifth Parallel R. R.
4-8½ g. 77 miles in progress.
Samuel A. Henszey, *Gen. Man*..Prescott, Ariz.
Prince Edward Island Ry. 3-6 g. 199 m. 18 lo. 280 c.
Jas. Coleman, *Supt. & Pur. Agt.*;
Jos. Unsworth, *M. Supt. & Storekeeper*; and
D. M. Fraser, *M. C. B*.. .Charlottetown, P. E. I.
Profile & Franconia Notch R. R. 3 g. 15 m. 3 lo. 18 c.
Emmons Raymond, *Pur. Agt*.... Boston, Mass.
C. H. Greenleaf, *Supt*......Profile House, N. H.
Prospect Park & Coney Island R. R.
4-8½ g. 15 m. 8 lo. 123 cars.
R. Schermerhorn, *Supt*........Brooklyn, N. Y.
Martin Painter, *M. M*...........Brooklyn, N. Y.
Prov., Warren & Bristol R. R. 4-8½ g. 19 m. 6 lo. 79 c.
Waterman Stone, *Supt*.. .. ..Providence, R. I.
Rufus Smith, *M. M. & C. B*.......Bristol, R. I.
Prov. & Springfield R. R. 4-8½ g. 23 m. 4 lo. 92 c.
Wm. Tinkham, *Gen. Man*.....Providence, R. I
G. T. Richardson, *M. M*........Providence, R. I.
Prov. & Worcester. 4-8½ g. 66 m. 34 lo. 1,155 c.
W. E. Chamberlain, *Supt* .....Providence, R. I.
A. Griggs, *Supt. L. & C. D*....Providence, R. I.
Pullman's Palace Car Co. 564 passenger cars.
A. B. Pullman, *2d V.-Pr. & G. M*.. Chicago, Ill.
Geo. F. Brown, *Gen. Supt*..... ...Chicago, Ill.
Wm. A. Angell, *Pur. Agt*..........Chicago, Ill.
S. W. Bretzfield, *Asst. Pur. Agt*. New York, N. Y.
A. Rapp, *Man*. (Chicago Works)...Chicago, Ill.
H. L. Spaulding, *Man*. (Det. Shops). Detroit, Mich.
E. A. Benson, *Supt. Shops*...... St. Louis, Mo.

Q

Quebec Central Ry. 4-8½ g. 147 m. 10 lo. 267 cars.
J. R. Woodward, *Gen. Man*..Sherbrooke, P. Q.
A. Steele, *Supt*............... Sherbrooke, Que.
R. D. Morkill, Jr., *Pur. Agt*..Sherbrooke, P. Q.
Jas. Seiveright, *M. M* .. .... Sherbrooke, P. Q.
Quebec, Montreal, Ottawa & Occidental Ry.
4-8½ g. 354 m. 36 lo. 993 cars.
L. A. Senecal, *Gen. Supt*........Quebec, Que.
Quebec & Lake St. John Ry. 4-8½ g. 36 m. 3 lo. 55 c.
J. G. Scott, *Manager*..............Quebec, Can.
Frank Fournier, *Supt*... ...St. Raymond, P. Q.
John T. Eames, *M. M*......St. Raymond, P. Q.
Queen Anne's & Kent and Townsend Branch R. R.
(*See Penna.; (4) Div.*)

R

Raleigh & Augusta Air-Line; Carolina Central,
Raleigh & Gaston R. Rs. 4-8½ g. 436 m. 50 lo. 994 c
John C. Winder, *Gen. Man. & P. A*. Raleigh, N. C.
Raleigh Rds. 4-8½ g. 194 m. 22 lo. 563 cars.
B. R. Harding, *Supt. of Mach*. Raleigh, N. C.
Carolina Cen. R. R. 4-8½ g. 242 m. 26 lo. 431 c.
L. C. Jones, *Supt*... . ...Wilmington, N. C.
James Maglenn, *M. of Mach*. Laurinburg, N. C.
S. R. Ethridge, *M. C. B* ...Laurinburg, N. C.
Rensselaer & Saratoga R. R. (*See Del. & Hud. Can. Co.*)
Rhinebeck & Connecticut. (*See Hart. & Ct. Wn.*)
Richmond, Fredericksburg & Potomac R. R.
4-8½ g. 83 m. 15 lo. 146 cars.
E. T. D. Myers, *Gen. Supt* .. Richmond, Va.
T. L. Courtney, *Asst. Supt* ..Richmond, Va.
H. Kuhn, *M. M*.......... ...Richmond, Va.
W. H. Trainham, *M. C. B*. ...Richmond, Va.
Richmond & Alleghany R. R. 4-9 g. 261 m. 19 lo. 837c.
Decatur Axtell, *Rec. & Gen. Man*. Richmond, Va.
M. Sweeney, *Pur. Agt*.. .... ..Richmond, Va
Geo. D. Harris, *M. M. & C. B*....Richmond, Va
Richmond & Danville R. R. Co.'s Roads.
1,736 miles 218 loco. 3,833 cars.
A. L. Rives, *Gen. Man* ....Richmond, Va.
Peyton Randolph, *As. G. Man*..Richmond, Va.
J. P. Minetree, *Pur. Agt*........ Richmond, Va.
R. D. Wade, *Supt. Mo. Po*... ...Richmond, Va.
(1) Rich. & Dan. R. R. 5 g. 847 m. 131 lo. 2,687 cars.
Rich. & Dan. Div.: 5 g. 320 m. 80 lo. 1,797 c
Wm. H. Green, *Supt*...... ....Richmond, Va.
T. W. Gentry, *M. M*.... ....Richmond, Va.
J. B. Vaughan, *For. Car Sh*...Richmond, Va.
North Carolina Div. 5 g. 223 m. 22 lo. 268 cars.
A. B. Andrews, *Supt*.... ......Raleigh, N. C.
W. H. Turrentine, *M. M*. Comp'y's Shops, N. C.
J. C. Holt, *For. Car Sh*. Comp'y's Shop N. C.
Atlanta & Char. Air Line. 5 g. 286m. 31 lo. 415 c.
Narrow-Gauge Branches. 3 g. 80 m. 5 lo. 41 c.
Edmund Berkley, *Supt*..... ....Atlanta, Ga.
W. A. Walden, *M. M*. . .. .Atlanta, Ga.
Z. T. Smith, *For. Car Sh*.... ... Atlanta, Ga.
(2 Charlotte, Col. & Aug. R. R. 5g. 239 m. 22 lo. 287 c
G. R. Talcott, *Supt*...........Columbia, S. C.
J. H. Green, *M. M*. (2 roads)...Columbia, S. C.
(3) Columbia & Greenville R. R. 5 g. 297 m. 22 l. 224 c.
G. S. Talcott, *Supt*...........Columbia, S. C.
J. O. Meredith, *For. E. & C. Rep*.. do.
(4) Virginia Midland Ry. 4-8½ g. 353 m. 41 lo. 631 c.
W. M. S. Dunn, *Eng. & Supt*. Alexandria, Va.
J. E. Waddey, *M. of M*......Alexandria, Va.
J. T. Nalls, *M. C. B*. ...... .Alexandria, Va.
Richmond & Petersburg R. R. 4-8½ g. 25 m. 8 lo. 132 c.
J. R. Kenly, *Supt*..... ....Richmond, Va.
John O'Brien, *M. M*.............Richmond, Va.
Rio Grande R. R. 3-6 g. 22 m. 3 lo. 40 cars.
M. J. Gomila, *Rec. & Gen. Man*. Brownsville, Tex.
G. W. Rendall, *M. M*......... Brownsville, Tex.
M. Markwood, *M. C. B*... ....Brownsville, Tex.
Rio Grande & Pecos Ry. 4-8½ g. 27 m. In progress.
W. W. Hungerford, *Man*..........Laredo, Tex.
Rochester & Lake Ontario Ry. 4-8½ g. 6 m. 2 lo. 10 c.
N. B. Ellison, *Man*.............Rochester, N. Y.
Rochester & Pittsb'g. R. R. 4-8½ g. 260 m. 60 lo. 3,146 c.
Geo. E. Merchant, *Gen. Man*...Rochester N. Y.
J. T. Gardiner, *Gen. Supt*....Rochester, N. Y.
J. P. Hovey, *M. M*............Rochester, N. Y.
J. R. Sherburne, *For. Sh*..... ..Buffalo, N. Y.
Rock Island & Mercer County R. R., and
Rock I'd & Peoria Ry. 4-8½ g. 113 m. 13 lo. 357 c.
R. R. Cable, *V.-P. & Gen. Supt*..Rock Island, Ill.
R. I. & P. Ry.: H. B. Sudlow, *Supt. & P. A*. do.
Joseph Elder, *M. M*................Peoria, Ill.
R. I. & M. C. Rd.: B. T. Cable, *Supt*. R'k Island, Ill.
J. H. Parks, *M. M*........... .Rock Island, Ill.
Rogersville & Jefferson R. R. 5 g. 16 m. 1 lo. 6 cars.
C. M. Leuty, *Supt*........... Rogersville, Tenn.
Rome (Ga.) R. R. 5 g. 20 m. 2 lo. 17 cars.
Eben Hillyer, *Supt*................. Rome, Ga.
O. W. Harbin, *M. M. & C. B*......... Rome, Ga.
Rome, Watertown & Ogdensburg R. R.
4-8½ g. 417 m. 61 lo. 1,831 cars.
H. M. Britton, *Gen. Man. & P. A*. Oswego, N. Y.
Geo. H. Haselton, *S. M. P. & M*..Oswego, N. Y.
E'n Div.: J. D. Remington, *A. Supt*. Watertown, N. Y.
W'n Div.: W. H. Chauncey, *A. Supt*. Oswego, N. Y.
Roodhouse & Scottsville Ry. In progress.
Geo. P. Merrill, *Gen. Man*..........Chicago, Ill.
Ruby Hill R. R. (*See Eureka & Pal.*)
Rumford Falls & Buckfield R. R. 4-8½ g. 29 m. 2 l. 62 c.
L. L. Lincoln, *Supt. & Pur. Agt*...Canton, Me.

S

Sabine & East Texas Ry. (*See Cen. Pac.*)
Sacramento & Placerville R. R. (*See Cen. Pac.*)
Saginaw Bay & Northw'n R. R. 4-8½ g. 31 m. 6 lo. 136 c.
J. Jackson, *Gen. Man*.... ...Pinconning, Mich.
F. T. Lillote, *Act. Pur. Agt*...Pinconning, Mich.
Edward Keeler, *M. M*........Pinconning, Mich.
Saginaw, Tuscola & Huron R. R.
3 g. 50 m. 3 lo. 83 cars.
M. B. Wilkinson, *Gen. Supt*..E. Saginaw, Mich.
Saginaw Valley & St. Louis R. R. 4-8½ g. 39 m. 4 l. 64 c
N. W. Merrill, *Supt* ....Saginaw, Mich.
Allan Bourn, *Pur. Agt*.. ....Detroit, Mich.
Geo. C. Watrous, *M. M*..... ....Iona, Mich.
Salisbury R. R. 4-8½ g. 11 m. 1 lo. 1 car.
R. J. Batzer, *Supt*..............Pittsburgh, Pa.
Salt Lake & Western R. R. (*See Un. Pac.; (6) Div.*)
San Francisco & No. Pac. 4-8½ g. 139 m. 11 lo. 245 c.
Arthur Hughes, *Gen. Man*..San Francisco, Cal.
H. C. Whiting, *Supt*..............Petaluma, Cal.
Ed. Reynolds, *Gen. M. M*.........Donahue, Cal.
Ed. Reynolds, *M. C. B*.......... Donahue, Cal.
Sanborn, Cooperstown & Turtle M. R. R. In progress.
C. A. Roberts, *Gen. Man*. ..... Sanborn, Dak.
Sandy River R. R. 2 g. 18 m. 3 lo. 36 cars.
N. B. Beal, *Pres. & Supt* ....Phillips, Me.
M. Saunders, *M. M. & C. B*....... ..Phillips, Me.
Sandusky, Mansfield & Newark R. R. (*See B. & O.*)
Sanford & Indian River R. R. (*See So. Flor.*)
San Luis Obispo & Santa Maria R. R.
3 g. 20 m. 2 lo. 30 cars.
Charles Goodall, *Man*......San Francisco, Cal.
San Pete Valley R. R. 3 g. 33 m. 2 lo. 57 cars.
F. C. Hand, *Supt*.....................Wales, U. T.
J. E. Bamberger, *Pur. Agt*.... Salt Lake, U. T.
B. Bates, *M. M*.......................Wales, U. T.
Santa Cruz R. R. (*See So. Pac.; Nor'n Div.*)
Saratoga, Mt. McGregor & Lake George R. R.
3 g. 11 m. 3 lo. 12 cars.
John McGee, *Supt*. ....Saratoga Springs, N. Y.
Savannah, Florida & W'n Ry. 5 g. 425 m. 50 lo. 736 c.
H. S. Haines, *Gen. Man*........Savannah, Ga.
R. G. Fleming, *Supt*..............Savannah, Ga.
F. S. Pendergast, *Ch. Eng*........Savannah, Ga.
A. A. Aveilhé, *Pur. Agt*..........Savannah, Ga.
G. M. D. Riley, *M. of Mach*......Savannah, Ga.
E. Giffken, *For. Car Dept*. .....Savannah, Ga.
Sav., Griffin & No. Ala. R. R. *Op. by Central (Ga.)*.
Schuylkill & Lehigh R. R. (*See Phil & Read.*)
Schoharie Valley R. R. (*See Middleburg & Sch.*)
Scioto Valley R. R. 4-8¾ g. 132 m. 17 lo. 548 cars.
Geo. Skinner, *Supt. & P. A t*.....Columbus, O.
R. Bromley, *M. M*. ... .Portsmouth, O.
Seaboard & Roanoke R. R. 4-8½ g. 80 m. 21 lo. 384 c.
E. G. Ghio, *Mast. of Trans*....Portsmouth, Va.
J. A. Walton, *Pur. Agt*........Portsmouth, Va.
M. M. Pendleton, *S. M. P. & M*. Portsmouth, Va.
Sedalia, Warsaw & Southern Ry. (*See Mo. Pac.*)
Sharpsville R. R. 4-8½ g. 23 m. 3 lo. 13 cars.
Walter Pierce, *Gen. Man*.......Sharpsville, Pa.
Shenandoah Valley R. R. 4-9 g. 249 m. 32 lo. 849 c.
Norfolk & Western R. R. 5 g. 486 m. 82 lo. 1,779 c.
J. H. Sands, *Gen. Supt* .... .Roanoke, Va.
W. C. De Armond, *Pur. Agt*. ..Philadelphia, Pa.
Chas. Blackwell, *Supt. of M. P*...Roanoke, Va.
W. A. Morgan, *M. C. B*.........Lynchburg, Va.
Sh. Val. Rd.: D. W. Flickwir, *Supt.*, Roanoke, Va.
N. & W.; W. Div.: Frank Huger, *Supt.*; and
N. & W.; E. Div.: N. M. Osborne, *Supt.*; and
J. T. Robinett, *M. M*. . ..... Petersburg, Va.
Shenango & Allegheny R. R 4-9½ g. 57 m. 8 lo. 248 c.
J. T. Blair, *G. Man. & Pur. Agt*. Greenville, Pa.
Edw. Richardson, *M. M. & C. B*. Greenville, Pa.
Shepaug R. R. 4-8½ g. 38 m. 3 lo. 28 cars.
Edwin McNeill, *Supt*............ Litchfield, Ct.
F. J. Broughet, *M. M*........... Litchfield, Ct.
Ship Is., Ripley & Ky. R. R. 3 g. 25 m. 2 lo. 23 cars.
C. L. Harris, *Supt. & Pur. Agt*....Ripley, Miss
W. H. Phelps, *M. M*................Ripley, Miss.
Silver City, Deming & Pacific R. R. 3 g. 47 m. 3 l. 141 c.
John W. Smith, *Gen. Supt*....Silver City, N. M.
Silver Lake Ry. 4-8½ g. 6 m. 1 lo. 4 cars.
S. L. Chapin, *Supt*............... ..Perry, N. Y
Sinaloa & Durango R. R. 4-8½ g. 38 m. 2 lo. 40 cars.
Geo. S. Skilton, *Supt*......Altata, Sinaloa, Mex.
John E. Bell, *M. M*...............Culiacan, Mex.
Skaneateles R. R. 4-8½ g. 5 m. 2 lo. 5 cars.
J. McNamara, *Supt*........Skaneateles, N. Y.
Sioux City & Pacific R. R. 4-8½ g. 427 m. 28 lo. 785 c.
P. E. Hall, *Gen. Man. & P. A*. Cedar Rapids, Ia.
C. M. Lawler, *Gen. Supt*....Missouri Valley, Ia.
W. G. Brownson, *Asst. Supt*......Norfolk, Neb.
S. A. Teal, *M. M*....... ....Missouri Valley, Ia.
W. H. Ramseyer, *M. C. B*. ..Missouri Valley, Ia.
Smyrna & Delaware Bay R. R. (*See Kent County.*)
Sodus Bay & Southern Ry. 4-8½ g. 34 m. 4 lo. 40 c.
G. H. Stearns, *Gen. Man*. ..Sodus Point, N. Y.
G. H. Stearns, *Supt. & Pur. Agt*. Sodus Point, N. Y.
F. H. Garlock, *M. M*........Sodus Point, N. Y
C. H. Hill, *M. C. B* ....Sodus Point, N. Y.
Somerset R. R. 4-8½ g. 25 m. 3 lo. 24 cars.
W. M. Ayer, *Supt & Pur. Agt*......Oakland, Me.
S. P. Mosher, *For. Car Rep*....No. Anson, Me.
C. Crowell, *For. Lo. Rep's*.....No. Anson, Me.
Somerset & Cambria R. R. (*See B. & O.*
Sonora Ry. (*See A., T. & S. Fe.*)
South & North Alabama R. R. (*See Louis. & Nash.*)
South Carolina Ry. 5 g. 246 m. 46 lo. 834 cars
John B. Peck, *Gen. Man*. ......Charleston, S. C.
S. B. Pickens, *Pur. Agt*........Charleston, S. C.
P. J. Cochrane, *Mast. of Mach*. Charleston, S. C.
Geo. H. Gramling, *M. C. B*....Charleston, S. C.
South-Eastern Ry. 4-8½ g. 280 m. 30 lo. 1,000 cars.
T. A. McKinnon, *Gen. Man*.....Montreal, Can.
A. G. Eastman, *M. M*..........Farnham, P. Q.
South Florida R. R. 3 gauge 115 m. 13 lo. 250 cars.
B. R. Swoope, *Supt. & P. A*.......Sanford, Fla.
R. Derby, *M. M*............. ......Sanford, Fla.
A. D. Stentiford, *M. C. B*..........Sanford, Fla.
South Mountain R. R. 4-8½ g. 18 m. 4 lo. 22 c.
W. H. Woodward, *Supt*. Pine G've Furnace, Pa.
South Pacific Coast R. R. 3 g. 81 m. 16 lo. 500 cars
M. Fillmore, *Supt*... .....San Francisco, Cal.
G. H. Waggoner, *Pur. Agt*. San Francisco, Cal.
D. E. Arnold, *M. M. & C. B* ....Newark, Cal.
South-Western R. R. (Ga.) (*See Central of Ga.*)
South-Western Ry. (Ky.) 4-8½ g. 4 m. 1 lo. 38 cars.
J. M. Wilson, *Supt*...........Harrodsburg, Ky.
J. Tomlinson, *Pur. Agt*......Harrodsburg, Ky.
Southern Central R. R. 4-8½ g. 156 m. 21 lo. 467 c.
James G. Knapp, *Gen. Supt. & P. A*. Auburn, N. Y
John White, *M. M*... ....Auburn, N. Y.
H. Mooney, *M. C. B*.............Auburn, N. Y.
Southern Kansas Ry. (*See At., Top. & Santa Fe.*)
Southern Maryland R. R. 4-8½ g. 20 m. 1 lo. 20 c.
Robert Knight, *Supt*. ....Brandywine, Md.
C. R. Joyce, *M. M*......... ...Brandywine, Md.
Southern Pacific R. R. 4-8½ g. 198 m. 30 lo. 728 c.
Northern Div. (*For other Divs. see Cen. Pac.*)
A. C. Bassett, *Supt*......San Francisco, Cal.
J. R. Watson, *Pur. Agt*.....Sacramento, Cal.
J. T. Wilson, *M. M*..... ..San Francisco, Cal.
F. N. Bellisle, *M. C. B*. ...San Francisco, Cal.
Southern Pacific R. R. of Arizona. (*See Cen. Pac.*)
Southern Pacific R. R. of New Mexico. (*See Cen. Pac.*)
Spartanburg, Union & Columbia R. R.
(*See Rich. & Dan.; (3) Div.*)
Spring Brook R. R. 4-3 g. 8 m. 1 lo. 18 cars.
Charles Pugh, *Pres*......... ... ..Pittston, Pa.
Spring Hill & Parrsboro Ry. (*See Cumberland.*)
Springfield, Effingham & So.-E'n Ry. (*See Ind. & Ill.*)
Springville & Sardinia Ry. 4-8½ g. 12 m. 1 lo. 8 c.
Bertrand Chaffee, *Pres*.......Springville, N. Y.
St. Croix & Penobscot R. R. 4-8½ g. 22 m. 4 lo. 195 c.
S. W. Haycock, *Supt. & Pur. Agt*. .Calais, Me.
G. H. Corsen, *M. M*....... .... ..Milltown, Me.
H. C. Tincker, *M. C. B*............Milltown, Me.
St. John & Maine Ry. (*See New Brunswick.*)
St. John's Ry. 4-8½ g. 14½ m. 2 lo. 24 cars.
R. McLaughlin, *Pr. & Supt*. .Jacksonville, Fla.
Geo. Ferro, *M. of Mach*.. ....Tocoi, Fla.
St. John's & Lake Eustis Ry. 3 g. 36 m.
W. J. Jarvis, *Supt*............. Ft. Mason, Fla.
St. Johnsb'ry & Lake Champ. 4-8½ g. 120 m 10 lo. 372 c.
A. B. Jewett, *Supt. & P. A*..St. Johnsbury, Vt.
Geo. E. Howe, *M. M. & C. B*. St. Johnsbury, Vt.
St. Joseph Valley R. R. 3 g. 15 m. 1 lo. 11 cars.
E. T. Chase, *Gen. Man*...Berrien Springs, Mich.
St. Joseph & Des Loge Ry. 3 g. 13 m. 4 lo. 70 cars.
T. T. Onderdonk, *Supt*.....Bonne Terre, Mo.
St. Joseph & Western R. R. (*See Union Pac.; (1) Div.*)
St. Joseph & Des Moines R. R. (*See K. C., St. J. & C. B.*)
St. Lawrence & Ottawa Ry. (*See Can. Pac.*)
St. Louis, Alton & Terre Haute R. R.
Main Line. (*See C., C., C. & I.; Ind. & St. L. Div.*)
St. Louis & Cairo Div.: 4-8½ g 137 m. 17 lo. 800 c.
G. W. Parker, *Gen. Man*.......St. Louis, Mo.
J. L. Hinckley, *Supt*... ... .Belleville, Ill.
A. M. De Clerq, *M. M*.........St. Louis, Mo.
St. Louis Bridge Co. and Tunnel R. R.
4-8½ g. 31 m. 22 lo. 11 cars.
Wm. Taussig, *Gen. Man*..........St. Louis, Mo.
A. W. Dickinson, *Supt*.... ....St. Louis, Mo.
J. E. Williams, Jr., *Pur. Agt*....St. Louis, Mo.
H. M. Smith, *M. M*................St. Louis, Mo.
St. Louis Coal R. R. 4-8½ g. 93 m. 10 lo. 217 cars.
Jas. Prentice, *Supt*..............Carbondale, Ill.
Jas. C. Bryden, *Pur. Agt*... ....St. Louis, Mo.
St. Louis, Des Moines & Northern Ry. 4-8½ g. 43 m.
C. F. Merk, *Supt*...............Des Moines, Ia.
St. L., Ft. Scott & Wichita R. R. 4-8½ g. 160 m. 6 l. 337 c.
J. W. Miller, *V. P. & Gen. Man*..Fort Scott, Kan.
Tho. N. Lewis, *Asst. Supt*......Fort Scott, Kan.
Tho. N. Lewis, *Pur. Agt*.... ..Fort Scott, Kan.
Henry Berger, *M. M* ....Ft. Scott, Kan.
A. A. Liddell, *M. C. B*......... ..Ft. Scott, Kan.
St. L., Hannibal & Keokuk. 4-8½ g. 85 m. 5 lo. 70 c.
W. W. Walker, *Gen. Supt*....... Hannibal, Mo.
Geo. Douglass, *Pur. Agt*.........Hannibal, Mo.
St. Louis, Iron Mt. & So'n Ry. (*See Mo. Pac.; (4) Div.*)
St. L., Keokuk & No.-W'n. Ry. (*See C., B. & Q.*)
St. L., Salem & Little Rock. 4-9 g. 72 m. 5 lo. 111 c.
H. A. Crawford, *V. Pr. & P. A*...St. Louis, Mo.
E. B. Sankey, *Supt*....................Salem, Mo.
Thomas Everson, *M. M*. ....Steelville, Mo
J. W. Houston, *M. C. B*...........Steelville, Mo.
St. Louis & Cairo R. R. 3 g. 152 m. 22 lo. 896 cars.
Chas. Hamilton, *Gen. Supt*..... .St. Louis, Mo.
R. M. Pringle, *M. M*..............St. Louis, Mo.
St. L. & San Fran. Ry. 4-8½ g. 902 m. 88 lo. 3,000 c.
C. W. Rogers, *V. P. & Gen. Man*..St. Louis, Mo.
D. H. Nichols, *Mast. Tran*..No. Springfield, Mo.
A. G. Thompson, *Pur. Agt*.......St. Louis, Mo.
M. Kearney, *M. M. & C. B*..No. Springfield, Mo.
East Div.: A. Veech, *Supt*...... ...St. Louis, Mo.
Central Div.: W. A. Thoms, *Supt*..Springfield, Mo.
Kan. Div.: J. R. Wentworth, *Supt*. Neodesha, Kan.
St. Martin's & Upham Ry. 4-8½ g. 30 m. 2 lo. 8 cars.
A. E. Killam, *Manager*........St. Martin's, N. B.
St. Paul, Minneapolis & Manitoba Ry.
4-8½ g. 1,402 m. 201 lo. 5,068 cars.
A. Manvel, *Gen. Man*............St. Paul, Minn.
E. B. Wakeman, *Asst. Gen. Supt*. St. Paul, Minn.
J. C. Morrison, *Pur. Agt*........ St. Paul, Minn.
H. Middleton, *M. M. & C. B* ... St. Paul, Minn.
Breck. Div.: W. S. Kemp, *Supt*...St. Paul, Minn.
F. F. Div.: J. B. Rice, *Supt*........St. Paul, Minn.
No'n Div.: A. Guthrie, *Supt*.....Crookston, Minn.
St. Paul & Duluth R. R. 4-8½ g. 225 m. 37 lo. 1,080 c.
W. H. Fisher, *Gen. Supt*..... ..St. Paul, Minn.
J. G. Callahan, *Pur. Agt*........St. Paul, Minn.
W. McFarland, *M. M*............St. Paul, Minn.
John Hill, *M. C. B*. ....St. Paul, Minn.
State Line & Sullivan R. R. 4-8½ g. 25 m. 3 lo. 263 c.
I. O. Blight, *Supt*.................Towanda, Pa.
Staten Island R. R. 4-8½ g. 13 m. 4 lo. 18 c.
J. W. Wilbur, *Supt*............New York, N. Y.
Stony Clove & Catskill Mountain R. R.
3 g. 14 m. 2 lo. 22 cars.
Geo. Coykendall, *Gen. Supt*....Rondout, N. Y.
Stony Creek R. R. 4-8½ g. 11 m.
Geo. B. Boggs, *Supt* .... Norristown, Pa.
Sterling Mountain Ry. 6 g. 8 m 2 lo. 145 cars.
J. C. Missimer, *Supt*...........Sloatsburg, N. Y.
Suffolk Lumber R. R. 3 g. 15 m. 3 lo. 41 cars.
W. M. Whaley, *Supt*.. ....Suffolk, Va.
Summit Branch R. R. 4-9 g. 20 m. 7 lo. 10 cars.
Thomas Gucker, *Supt*........Williamsport, Pa.
Susquehanna & Delaware River R. R. In progress.
D. Y. Kilgore, *Pres*............Philadelphia, Pa.
Sussex R. R. (*See Del., Lack. & West.*)

Syracuse, Binghamton & N. Y. R. R. (*See D. L. & W.*)
Syr., Ontario & N. Y. R. R. (*See N. Y., W. Sh. & Buf.*)
Syracuse, Geneva & Corning; Corning, Cowanasque & Antrim R. Rs. 4-8½ g. 142 m. 28 lo. 1,044 c.
A. H. Gorton, *Supt* ....Corning, N. Y.
W. E. Gorton, *Asst. Supt* ....Corning, N. Y.
Andrew Beers, *Pur. Agt* ....Corning, N. Y.
O. C. Patchell, *M. M* ....Corning, N. Y.
C. J. Butler, *M. C. B* ....Corning, N. Y.

T

Tennessee Coal R. R. 5 g. 28 m. 8 lo. 204 cars.
A. M. Shook, *Gen. Man* ......Tracy City, Tenn.
W. A. Knight, *M. M* .... Tracy City, Tenn.
Tennessee & Sequatchee Valley R. R. 3 g. 42 m. 1 lo. 24 cars.
Chas. Clinton, *Gen. Supt* ....Spring City, Tenn.
P. V. Mooney, *Pur. Agt* ......Spring City, Tenn.
Terre Haute & Indianapolis R. R. 4-9 g. 398 m. 105 lo. 4,170 cars.
Joseph Hill, *Gen. Supt* ....St. Louis, Mo.
C. R. Peddle, *P. Agt* ....Terre Haute, Ind.
Geo. H. Prescott, *S. M. P. & M.* Terre Haute, Ind.
F. C. Cleaver, *M. M* ....Terre Haute, Ind.
E. D. Carter, *M. C. B* ......Terre Haute, Ind.
Chas. Butler, *M. M* ....Effingham, Ill.
Clinton Idler, *Foreman* ... Indianapolis, Ind.
Terre Haute & So.-Eastern Ry. 4-9 g. 44 m. 2 lo. 145 c.
Geo. Atherton, *Supt* .... Terre Haute, Ind.
Texas-Mexican Ry. (*See Mex. Nat.*)
Texas Trunk R. R. 4-8½ g. 36 m. 2 lo. 8 cars.
Hugh Irwin, *Gen. Supt* ....Dallas, Tex.
Texas Western Ry. 3 g. 52 m. 2 lo. 44 cars.
Henry Hatch, *Gen. Man* ....Houston, Tex.
T. F. Glispin, *M. M* ....Houston, Tex.
Texas & N. O. R. R. (*See Cen. Pac.; G. H. & S. A. Div.*)
Texas & Pacific. (*See Mo. Pac. Ry.; (6) Div.*)
Texas & St. Louis Ry. 3 g. 769 m. 84 lo. 2,000 cars.
W. R. Woodard, *Rec* .. ..St. Louis, Mo.
F. W. Paramore, *Pur. Agt* ....St. Louis, Mo.
G. W. Prescott, *S. M. P. & M* ...St. Louis, Mo.
A. E. Buchanan, *Supt* ....Pine Bluff, Ark.
Tex. Div.: J. T. Gerry, *Supt.* ....Tyler, Tex.
P. J. Milan, *M. M* ....Tyler, Tex.
Tionesta Valley R. R. 3 g. 15 m
George Dickinson, *Gen. Supt* ..... Sheffield, Pa.
Tioga R. R. 4-8½ and 6 g. 67 m. 18 lo. 960 cars.
R. Dupuy, *Supt* ....Blossburg, Pa.
J. C. Guthrie, *Pur. Agt* ... ...New York, N. Y.
Pere Bonny, *M. M* ....Blossburg, Pa.
D. H. Stratton, *M. C. B* ...... .Blossburg, Pa.
Toledo, Ann Ar. & Gr. Tr. Ry. 4-8½ g. 63 m. 9 lo. 186 c.
J. M. Ashley, *Gen. Man* ......Ann Arbor, Mich.
H. W. Ashley, *Supt. & Pur. Agt.* do
C. C. Dodge, *M. M* ....Ann Arbor, Mich.
Toledo, Cin. & St. Louis R. R. 3 g. 798 m. 101 lo. 3,500 c.
E. P. Murray, *Gen. Supt* ....Toledo, O.
F. W. Stewart, *P. Agt* ....Toledo, O.
L. W. James, *Supt. Mach* ....Delphos, O.
Toledo Div.: W. H. Vandergrift, *Supt.*; do
Thos. Robertson, *M. M* ....Delphos, O.
J. S. Wiers, *For. Car Rep* ....Delphos, O.
Del. & Cin. Divs.: C. A. Bell, *Supt* ....Cin., O.
T. J. Hamer, *M. M* ....Cincinnati, O.
So. D. & E. Div.: W. W. Cummings ..Dayton, O.
W. H. Anderson, *M. M* ....Dayton, O.
St. Louis Div.: Frank F. Allen....Charleston, Ill.
P. H. Murphy, *M. M* .. ..Charleston, Ill.
Ironton Div.: C. C. Clark, *Supt* . ....Ironton, O.
Toledo & Indianapolis R. R. 4-8½ g. 43 m. 4 lo. 118 c.
M. Clark, *Supt* ....Toledo, O.
H. M. Swan, *M. M.* ....Toledo, O.
Toledo & South Haven R. R. (*See Paw Paw.*)
Tonawanda Val. & Cuba R. R. (*See Brad., B. & K.*)
Toronto, Grey & Bruce Ry. 4-8½ g. 191 m. 28 l. 446 c.
Edmund Wragge, *Gen. Man* ... .Toronto, Can.
W. Watson, *Pur. Agt* .... Toronto, Can.
David Preston, *M. M* .... Toronto, Can.
Toronto & Nipissing Ry. (*See Mid. Ry. of Can.*)
Troy & Boston R. R. 4-8½ g. 48 m. 20 lo. 484 cars.
D. Robinson, *Pres. & Pur. Agt* ......Troy, N. Y.
Joseph Crandell, *Supt.* ....Troy, N. Y.
Z. B. Davis, *M. M* ....Troy, N. Y.
A. Brewer, *M. C. B* ....Troy, N. Y.
Troy & Greenfield R. R. & H. Tunnel. 4-8½ g. 44 m.
A. W. Locke, *Man* ....North Adams, Mass.
Tuckerton R. R. 4-9 g. 31 m. 2 lo. 29 cars.
J. J. Pharo, *Supt. & Pur. Agt.* Tuckerton, N. J.

U

Ulster & Delaware R. R. 4-8½ g. 74 m. 10 lo. 214 cars.
Jas. H. Jones, *Supt* ....Rondout, N. Y.
Joseph Rush, *M. M* ....Rondout, N. Y.
John H. Decker, *M. C. B* ....Rondout, N. Y.
Union Pacific Ry. (7 Gen. Divs.) 3 & 4-8½ g. 4,633 m. 510 lo. 10,550 cars.
S. H. H. Clark, *Gen. Man* ....Omaha, Neb.
Thos. L. Kimball, *Asst. Gen Man.* Omaha, Neb.
M. H. Goble, *Pur. Agt* ....Omaha, Neb.
I. H. Congdon, *S. M. P. & C. D* ...Omaha, Neb
John Wilson, *Asst. do* ....Omaha, Neb.
(1) Neb. Div.: P. J. Nichols, *Gen. Supt* ..Omaha, Neb.
E. Div.: C. B. Havens, *Supt* . .....Omaha, N. B.
R. McConnell, *M. M* .... Omaha, Neb.
A. M. Collett, *M. C. B* ....Omaha, Neb.
E. Sleppy, *M. M* ....G. Island, Neb.
L. Pole Div.: W. A. Deuel, *Supt* ..Cheyenne, W. T
J. H. McConnell, *M. M.* ....N. Platte, Neb.
R. McDougall, *M. M* ....Cheyenne, W. T.
(2) Wy. Div.: E. Dickenson, *Gen. Supt* ..Laramie, W. T.
T. E. Lewis, *M. M.* ....Laramie, W. T.
T. A. Davis, *M. M* ....Rawlins, W. T.
Wes. Div.: C. E. Wurtelle, *Supt.* Evanston, W. T.
Geo. F. Chapman, *M. M* ....Evanston, W. T.
3) Idaho Div.: W. B. Doddridge, *Gen. Supt.* Ogden, U.
F. Rearden, *M. M.* .. .. Pocatello, Id.
Ogden Short Line Div.:
R. Blickensderfer, *Supt* .... .. Pocatello, Id.
Utah & Northern Div.:
W. P. P. St. Clair, *Supt* ... ...Eagle Rock, Id.
W. J. Hemphill, *M. M* ....Eagle Rock, Id.
W. J. Hemphill, *M. M* .... Eagle Rock, Id.
J. W. Paul, *Gen. For. C. D* .. .Eagle Rock, Id.
(4) Col. Cent. Div.: A. A. Egbert, *Gen. Supt.* Denver, Col.
F. Meirtsheimer, *M. M* . ...Denver, Col.
C. C. Div.: P. Touhy, *Supt* ....Denver, Col.
So. Park Div.: D. K. Sweet, *A. Supt* ..Como, Col.
(5) Kan. Div.: S. T. Smith, *G. Supt* ..Kansas City, Mo.
K. Val. Div.: J. O. Brinkerhoff, *Supt.* Kan. C'y, Mo.
Jas. Mackenzie, *M. M* . .... Armstrong, Kan.
Kansas Central Div.:
W. T. Kelley, *Supt* ....Leavenworth, Kan.
Smoky Hill Div.:
O. H. Dorance, *Supt* ....Wallace, Kan.
J. B. Dailey, *M. M.* ....Ellis, Kan.
(6 Salt Lake & Western Div.:
W. W. Ritter, *Supt* ......Salt Lake City, Utah.
7) Nevada Central Ry. 3 g. 93 m. 4 lo. 78 cars.
F. W. Dunn, *Gen. Supt. & P. A.* Battle Mt., Nev.
Z. T. Sprigg, *M. M* ....Battle Mountain, Nev.
United States Rolling Stock Co. 19 lo. 4,692 cars.
A. Hegewisch, *Pres* ....New York, N. Y.
W. H. Chaddock, *Gen. Agt* ....Chicago, Ill.
Upson County R. R. (*See Central of Ga.*)
Utah Central Ry. 4-8½ g. 280 m. 21 lo. 358 cars.
John Sharp, *Gen. Supt* ...Salt Lake City, Utah.
S. H. Hill, *Pur. Agt* ....Salt Lake City, Utah.
Geo. G. Bywater, *M. M* ..Salt Lake City, Utah
Peter Reid, *M. C. B* ....Salt Lake City, Utah.
Utah & Nevada Ry. 3 g. 37 m. 3 lo. 33 cars.
W. W. Ritter, *Gen. Man* ...Salt Lake City, Utah.
Robert Anderson, *M. M* ..Salt Lake City, Utah.
Utah & Northern Ry. (*See Union Pac.; (3) Div.*)
Utah & Pleasant Valley Ry. (*See Den. & Rio. Gr.*)
Utica, Ithaca & Elmira Ry. 4-8½ g. 120 m. 11 lo. 152 c.
Geo. S. Sadler, *Supt* ...., Elmira, N. Y.
Edw. Mahler, *Pur. Agt* ....Elmira, N. Y.
C. J. Howe, *M. M. & M. C. B* ..Breesport, N. Y.
Utica, & Black Riv. R. R. 4-8½ g. 180 m. 22 lo. 452 c.
J. F. Maynard, *Gen. Supt. & P. A.* .Utica, N. Y.
John Bailey, *M. M* ....Utica, N. Y.
David James, *M. C. B* ....Utica, N. Y.

V

Vaca Vall. & Clear Lake R. R. 4-8½ g. 30 m. 2 lo, 19 c.
G. B. Stevenson, *Gen. Supt* ... ..Vacaville, Cal.
lley Ry. (Ohio) 4-8¾ g. 85 m. 15 lo. 581 cars
J. E. Turk, *Supt. & P. Agt* ....Cleveland, O.
Chas. Blanchard, *M. C. B* ....Cleveland, O.
Valley R. R. Va. 4-8½ g. 62 m.
S. Spencer, *Pres* .. ..Baltimore, Md.
Vermont Valley R. R. (*See Conn. River.*)
Vicksburg & Brunswick R. R. (*See Cen. of Ga.*)
Vicksburg & Meridian R. R. (*See Cin., N. O. & Tex. Pac.*)
Vicks. Shreveport & Pac. R. R. (*See C., N. O. & T. P.*)
Victoria Ry. (*See Midland Ry. of Can.*)
Virginia Midland Ry. (*See Rich. & Dan.; (4) Div.*)
Virginia & Truckee R. R. 4-8½ g. 54 m. 17 lo. 375 c.
Carson & Colorado R. R. 3 g. 294 m. 6 lo. 134 c.
H. M. Yerington, *Gen. Supt* ... .. Carson, Nev.
R. J. Laws, *Supt.* (C. & Col.) ..Hawthorne, Nev.
Hume Yerington, *Pur. Agt* ....Carson, Nev.
I. N. Fording, *M. M* .. ..Carson, Nev.
M. M. Hyde, *M. C. B* ... . Carson, Nev.

W

Wabash, Chester & W'n R. R. (*See St. Louis Coal.*)
Wabash, St. Louis & Pacific Ry. (4 Gen. Divs.) 4-8½ g. 3,241 m. 598 lo. 17,230 cars.
A. L. Hopkins, *2d V. P* .... St. Louis, Mo.
A. A. Talmage, *Gen. Man* ... ...St. Louis, Mo.
Robert Andrews, *Con. Eng* .. ...St. Louis, Mo.
R. B. Lyle, *Pur. Agt* ....St. Louis, Mo.
Jacob Johann, *Gen. M. M* .....Springfield, Ill.
U. H. Kohler, *Gen. M. C. B* ....Toledo, O.
(1) Eas'n Div.: G. W. Stevens, *Supt* ....Peru, Ind.
J. B. Barnes, *M. M* ....Fort Wayne, Ind.
John McKenna, *M. M* ....Peru, Ind.
Cairo Div.: *M. M* ....Carmi, Ill.
Rant'l Div.: B. F. Mathias, *Asst. Supt.* Rantoul, Ill
J. McCarthy, *M. M* ....Rantoul, Ill
(2) Middle Div.: H. F. Clark, *Supt* ...Springfield, Ill.
B. B. Rose, *M. C. B* ....Decatur, Ill.
G. A. Hurd, *Asst. Supt.* ....Forest, Ill.
(3) Northern Div.: E. N. Armstrong, *Supt.* Peoria, Ill.
R. M. Hemphill, *M. C. B* ....Peoria, Ill.
E. B. Hyde, *Asst. Supt* .... Havana, Ill.
(4) Western Div.: R. S. Miner, *Supt* .....Moberly, Mo
W. H. Selby, *M. M* ....Moberly, Mo.
C. S. Buck, *M. C. B* ....Moberly, Mo.
E. Dresser, *Asst. Supt* ....Stanberry, Mo
D. Moin. Div.: C. F. Meek, *A. Supt.* Des Moines, Ia
Walden's Bridge R. R. 3 g. 23 m. 3 lo. 37 cars.
John G. Scott, *Gen Man* ....Jenks P. O., Tenn.
Walkill Valley.
J. E. Childs, *Gen. Supt* ....New York, N. Y.
Geo. H. Graves, *Supt* ... .Kingston, N. Y.
E. Minshull, *M. M* ....Middletown, N. Y.
I. W. Fowler, *Pur. Agt* .... .Middletown, N. Y.
Walla Walla & Columbia Riv. R. R. (*See Ore. Ry.*)
Walton R. R. 5 g. 10 m. 1 lo. 7 cars.
D. H. Walker, *Pres* ....Monroe, Ga.
Warren & Farnsworth Valley R. R. 3 g. 11 m. 3 lo. 39 cars.
A. D. Wood, *Supt* ....Warren, Pa.
Warwick Valley R. R. (*See Leh. & Hud. River.*)
Wasatch & Jordan Valley R. R. (*See Den. & Rio. Gr.*)
Washington, Ohio & West. R. R. 4-8½ g. 52 m. 5 lo. 87 c.
S. M. Brophy, *Supt* .... Alexandria Va.
W. Mountjoy, *Act. For* ....Alexandria, Va.
John Harrison, *M. C. B* ....Alexandria, Va.
Waynesburg & Washington Rd. 3 g. 29 m. 3 lo. 26 c.
C. E. Bower, *Supt* ....Waynesburg, Pa.
A. M. Kline, *M. C. B* ....Waynesburg, Pa.
Welland Ry. 4-8½ g. 25 m. 4 lo. 147 cars.
William Pay, *Supt* ....St. Catharines, Ont.
Jas. Taylor, *M. M* ... .St. Catharines, Ont.
Wm. H. Pay, *M. C. B* ....St. Catharines, Ont.
West End Narrow Gauge Ry. 3 g. 16 m. 3 lo. 13 c.
Rolla Wells, *Supt* .... St. Louis, Mo.
M. M. Hodgman, *M. M* ....Florissant, Mo.
West Feliciana R. R. 4-8½ g. 27 m. 2 lo. 22 cars
J. B. McGehee, *Pr. & Gen. Supt.* Bayou Sara, La.
J. A. Tilton, *M. M. & C. B* .....Bayou Sara, La.
W. Va., Central & Pittsb'g Ry. 4-8½ g. 50 m. 4 lo. 119 c.
T. B. Davis, *Gen. Man* ....Piedmont, W. Va.
W. E. Porter, *Gen. Supt* ......Piedmont, W. Va
Geo. W. Harrison, *Pur. Agt* ...Piedmont, W. Va.
E. W. Lippencott, *M. M* .....Piedmont, W. Va.
West & East R. R. (*See Ill. Cen.; N. O. Div.*)
West Jersey R. R. (*See Penn. R. R.; (3) Div.*)
Western R. R. (of Ala.) 5 g. 85 m. 15 lo. 270 cars.
Atlanta & W. Point Rd. 5 g. 87 m. 14 lo. 240 c.
Cecil Gabbett, *Gen. Man. & Supt* ...Mont., Ala.
C. D. Wall, *M. M. & C. B* ...Montgomery, Ala.
Western Counties' Ry. 4-8½ g. 67 m. 8 lo. 137 cars.
J. Brignell, *Supt* . ...Yarmouth, N. S.
Western Maryland R. R. 4-8½ g. 157 m. 25 lo. 439 c.
J. M. Hood, *Pr. & Gen. Man* ....Baltimore, Md.
R. J. Adair, *Pur. Agt* ....Baltimore, Md.
David Holtz, *Mast. of Mach.* .Union Bridge, Md.
J. H. Nussear, *M. C. B* ....Union Bridge, Md.
Western No. Carolina R. R. 5 g. 210 m. 17 lo. 160 c.
V. E. McBee, *Supt* ....Salisbury, N. C.
Jos. P. Minetree, *Pur. Agt* ....Richmond, Va.
G. W. Gates, *M. M* ....Salisbury, N. C.
Western & Atlantic R. R. 5 g. 138 m. 58 lo. 952 c.
R. A. Anderson, *Gen. Supt* ....Atlanta, Ga.
A. B. Bostwick, *Asst. Supt* .... Atlanta, Ga.
John H. Flynn, *M. M. & C. B* .....Atlanta, Ga
Wheeling, Pittsburg & Baltimore R. R. .(*See B. & O.*)
Wheeling & Lake Erie R. R. 267 m. 31 lo. 1,456 c.
M. D. Woodford, *Gen. Man* ....Toledo, O
O. P. Dunbar, *Gen. M. M* ....Norwalk, O.
John Hillhouse, *Div. M. M* ....Norwalk, O.
Cleve. & Mar. Div.:
A. Galloway, *Div. M. M* ...... Cambridge, O
Whitby, Port Perry & Lindsay Ry. (*See Mid. of Can.*)
White Water R. R. (*See Ft. W., Cin. & Lou.*)
Whitefield & Jefferson R. R. (*See Bos., Con. & Mon.*)
Whitneyville & Machiasport R. R. 8 m. 2 lo. 48 c.
C. Sullivan, *G. M. & Pur. Agt.* Whitneyville, Me.
Wicomico & Pocomoke R. R. 4-8½ g. 30 m. 2 lo. 38 c.
L Showell, *Pres* ....Berlin, Md.
Williamsport & North Branch R. R. 4-8½ g. 9 m. 2 lo. 4 cars.
B. G. Welch, *Man. & P. Agt* ...Hughesville, Pa.
J. V. Chamberlain, *Supt. & M. M.* do.
Williamstown & Del River R. R. 4-8½ g. 9 m. 1 lo. 10 cars.
Samuel Garwood, *Supt* ...Williamstown, N. J.
Wilmington, Columbia & Augusta R. R. (*See W. & W.*)
Wilmington & No'n R. R. 4-8¾ g. 85 m. 16 lo. 148 c.
J. H. Thompson, *Supt. & P. A.* .Coatesville, Pa.
George Rommel, *M. M* ....Coatesville, Pa
Alex. Maitland, *M. C. B* ....Coatesville, Pa.
Wilmington & Weldon; Northeastern; S. C. Central; Cheraw & Darlington; Cheraw & Salisbury; and Wilmington, Columbia & Augusta R. Rs. 5 g. 599 miles 70 locomotives 1,120 cars.
R. R. Bridgers, *Gen. Man* ....Wilmington, N. C.
J. F. Divine, *Gen. Supt* ....Wilmington, N. C.
John Bisset, *M. M* ....Wilmington, N. C.
W. H. Day, *M. C. B* ....Florence, S. C.
J. H. Davis, *M. C. B.* (W. & W.) Wilmington, N. C.
Winifrede R. R. 4-9 g. 5 m. 1 lo. 65 cars.
Theodore Wright, *Pres* ....Philadelphia, Pa.
Windsor & Annapolis Ry. 4-8½ g. 130 m. 10 lo. 160 c.
P. Innes, *Gen. Man* ....Kentville, N. S.
Wm. Yould, *M. M* ....Kentville, N. S.
Wm. Grierson, *M. C. B* ....Kentville, N. S.
Wisconsin Central R. R. 4-8½ g. 480 m. 49 lo. 1,800 c
F. N. Finney, *Gen. Man* ....Milwaukee, Wis.
E. K. Howes, *Pur. Agt* ....Milwaukee, Wis.
W. A. Short, *Supt. M. P. & M* ...Stevens Pt., Wis.
Mil. & E'n Divs.: A. A. Allen, *S.* .Milwaukee, Wis.
Wis., Minn. & S. M. & N. Div.:
W. E. Carroll, *Supt* .. ..Stevens Point, Wis.
Wisconsin, Iowa & Nebraska.
G. C. McMichael, *Supt* ....Marshalltown, Ia.
Wisconsin & Michigan R. R. (*See Mil. & North'n.*)
Wisconsin & Minnesota R. R. (*See Wis. Cen.*)
Wood River Branch R. R. 4-8½ g. 6 m. 2 lo. 3 cars.
L. M. Barber, *Supt* .... Hope Valley, R. I.
Woodstock R. R. 4-8½ g. 14 m. 1 lo. 3 cars.
J. G. Porter, *Supt* ....Woodstock, Vt.
Worcester R. R. (Md.) (*See Del., Md. & Va.*)
Worcester, Nashua & Rochester R. R. 4-8½ g. 95 m. 20 lo. 523 cars.
C. S. Turner, *Pres. & G. Man.* Worcester, Mass.
G. W. Hurlburt, *Supt* ....Worcester, Mass.
John G. Brady, *M. M. & C. B.* Worcester, Mass
Worcester & Shrewsbury R. R. 3 g. 3 m. 3 lo. 9 c.
J. J. Coburn, *Supt* ....Worcester, Mass.
G. E. Hapgood, *Pur. Agt* ...Worcester, Mass.
Chas. Cleveland, *M. M* ....Worcester, Mass.
Worcester & Somerset R. R. (*See N. Y., Phil. & Nor.*)

Y

York & Peach Bottom Ry. 3 g. 40 m. 4 lo. 74 c.
S. M. Manifold, *Supt. & Pur. Agt* .....York, Pa.
S. J. Williams, *M. M* ....York, Pa.
Youghiogheny R. R. 4-9 g. 12 m.
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The Lake Shore & Michigan Southern Railway Company.

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This Company desire to sell the following described Engines, for cash. The Boilers of these Engines are all in good condition, and the Engines are in good working order.

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By Whom Built.	Engine.	Cylinders.		Drivers.		Weight.		Coal or wood burners.	Value.
		Diam.	Stroke.	No.	Diam.	Engine.	On drivers.		
Boston Lo. Wks...	2	15	20	4	5.	50,700	33,500	Wood.	$1,800.00
Swinburne.........	39	16	22	4	4.10	59,000	36,000	Coal.	3,200.00
"	40	15	22	4	4.10	57,000	35,000	"	3,000.00
M. S. & N. I. Ry ...	53	15	20	4	4.10	58,000	35,000	"	3,500.00
" "	88	16	22	4	5.	60,000	16,000	"	3,000.00
Amoskeag..........	228	15	22	4	5.	57,000	35,000	"	2,700.00
N. J. Lo. Works....	233	16	22	4	5.	60,000	35,000	"	3,200.00
Amoskeag..........	496	16½	22	4	5.	59,000	36,000	"	3,000.00
L. S. & M. S. Ry.....	217	16	22	4	5.	58,000	36,000	"	3,500.00
Cuyahoga	226	16	22	4	5.	55,000	35,000	"	3,000.00
L. S. & M. S. Ry...	227	16	22	4	5.	58,000	36,000	"	3,000.00
Manchester.........	229	16	22	4	5.	58,000	36,000	"	2,800.00
Cuyahoga...........	230	16	22	4	5.	57,000	36,000	"	3,200.00
L. S. & M. S. Ry...	201	16	22	4	5.	58,000	36,000	"	3,000.00

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SUPPLIES OF EVERY DESCRIPTION.
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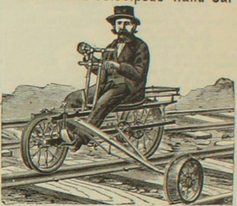

This Hand-Car is especially adapted to the use of **Road-Masters, Bridge Inspectors, Telegraph Line Repairers, Track Inspectors, Track Walkers, Wood** and **Tie Inspectors** and for all work where one or two men wish to go over the line at will. Also, our Telegraph Cars, capable of carrying two men and material. Light, Easily Handled, and when ready for shipment occupy very little space in Baggage Car—a great advantage to railroad men. Run easily, being propelled by the **ROWING MOVEMENT.** Can be run short distances at the rate of **20 Miles an hour; and will not jump the track.**

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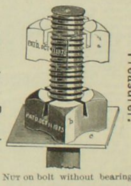

a. Atwood Nut on bolt without bearing on base slots open.
b. Atwood Nut turned to bearing c partially closing the slots and grasping the bolt.

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ENGRAVER ON WOOD
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THE STANDARD LUBRICATING OIL
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No freezing in coldest weather, and entire freedom from hot journals at any time, as its exclusive use upon a majority of the leading railroads has demonstrated.

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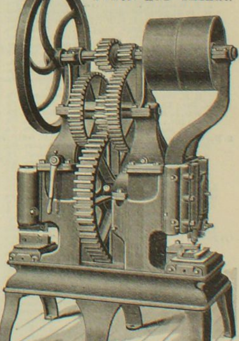

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It contains an alphabetical list of about 2,500 words and their definitions, covering 188 pages and 800 engravings, which occupy 300 pages more, the whole book having 490 pages. A large proportion of the engravings are made to a scale and illustrate all the different parts of railroad cars, and nearly all kinds of railroad cars in use in this country, forming the most complete collection of illustrations of the subject ever published, and being the only book on American railroad cars in existence. 800 engravings, 490 pages; size, 5¼ × 8 inches. Price, $2. Address, Car-Builder, New York.

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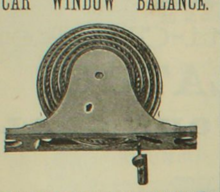

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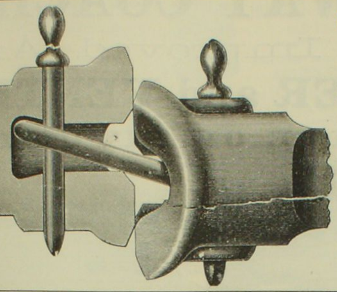

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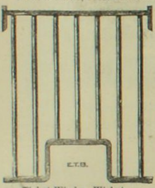

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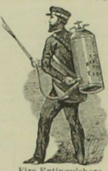

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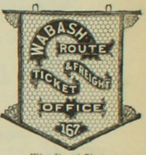

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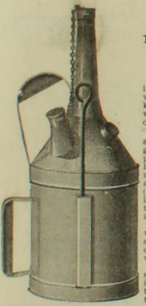
Patent Liquid and Condensed COOLER.



For Cooling Railroad Car and Steamboat Journals and Bearings of all Kinds, and for Mixing with Other Oils.

The attention of those who are running heavy journals is respectfully invited to the above Liquid Cooler. It has been successfully used for upward of ten years, and is constantly growing in favor as its merits become known, and we are confident that practical men cannot fail of being convinced that our preparation deserves their candid attention. What we claim for it is:

That it will Cool a Hot Journal When in Motion,
and extinguish the flame when the box is on fire; that its use will, in a great measure, prevent the occurrence of a hot journal and save the expense, delays and annoyances incident thereto; that it will eliminate the heat from a journal at a temperature greatly below the point required to melt the babbitt, preventing the accumulation of heat, and by a timely application save it from destruction; that its non-inflammable elements (where waste is used) permeate the waste and prevent its taking fire; that it keeps the journal smooth and polished, preventing unnecessary friction; that its combination is based upon true scientific principles which render it impossible to fail in its results, and is the

Only Preparation that will Cool a Hot Journal
while it is in motion, as attested by certificates below; that one thorough application on a hot journal will do more execution in cooling than the constant application of water for half an hour, besides doing it evenly and without loss of time.

Every Railroad Train or Steamboat
should have a can of the Liquid packing on board, with the directions for its use pasted upon it, and thus have always at hand the means of effectually cooling a hot journal, and thereby avoid the expense, danger and trouble from this cause.

WHAT RAILROAD MEN SAY OF IT.

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MR. P. NOYES.—*Dear Sir:* I have been using your Liquid Packing for cooling car journals for some time past and have been well pleased with it. I have had occasion to use it a number of times, under Pullman cars, and it has been a complete remedy in every case of hot journals.
Yours truly,
J. P. SOMERBY,
M. C. B. Eastern Railroad.

(Copy).
CLEVELAND, O., June 9, 1883.

NOYES MFG. CO., Boston, Mass.—Please furnish on account of this company and send invoices in duplicate direct to my address, 3 barrels Noyes' Patent Liquid Cooler. Mark packages: A. C. Robson, Buffalo, N. Y.; F. O. Bray, Adrian, Mich.; A. Merritt, Cleveland, O.
Yours truly,
(Signed), A. C. ARMSTRONG,
Gen'l Purchasing Agent L. S. & M. S. Ry. Co.

SALEM, Aug. 28, 1880.

I can recommend Noyes' Liquid Cooler as an excellent article to carry on trains for use in case of Hot Journals, which it cools without injury to the journals more effectually than anything I know of
J. B. BILLINGS,
M. C. B. Eastern Railroad.

BOSTON, April 7, 1880.

P. NOYES, Agent.—*Dear Sir:* Please send for account of Eastern Railroad five barrels Liquid Cooler.
GEO. J. FISHER, P. A.

BOSTON, May 24, 1877.

P. NOYES, Agent.—*Dear Sir:* Having used your Liquid Cooler two or three years I find it necessary for the safe running of our cars to continue its use. When the cooler is mixed with black oil, according to directions, the compound is equal to lard or sperm oil, and it is the best Cooler I have ever used.
Yours truly, JOHN F. CROCKETT,
Master Mechanic Boston, Lowell & Nashua R. R.

BOSTON, April 23, 1880.

NOYES MFG. CO.—*Gents:* Please send to East Cambridge, for account Boston & Lowell Railroad, five barrels Liquid Cooler.
Yours truly,
F. H. NOURSE,
Purchasing Agent.

Our Liquid Cooler is now in use, and has been from one to eight years, upon the following roads, and we have numerous recommendations from them: Boston & Maine R. R., Boston & Lowell R. R., Cin., Wabash & Mich. Ry., Boston, Concord & Montreal R. R., Fitchburg R. R., Eastern R. R., New York, New Haven & Hartford R. R., New York & New England R. R., Connecticut River R. R., Scioto Valley R. R., Old Colony, Lake Shore & Michigan Southern Ry. Co.

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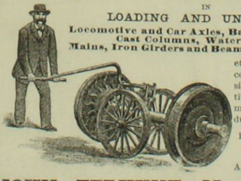

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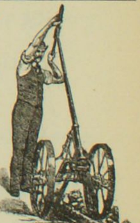

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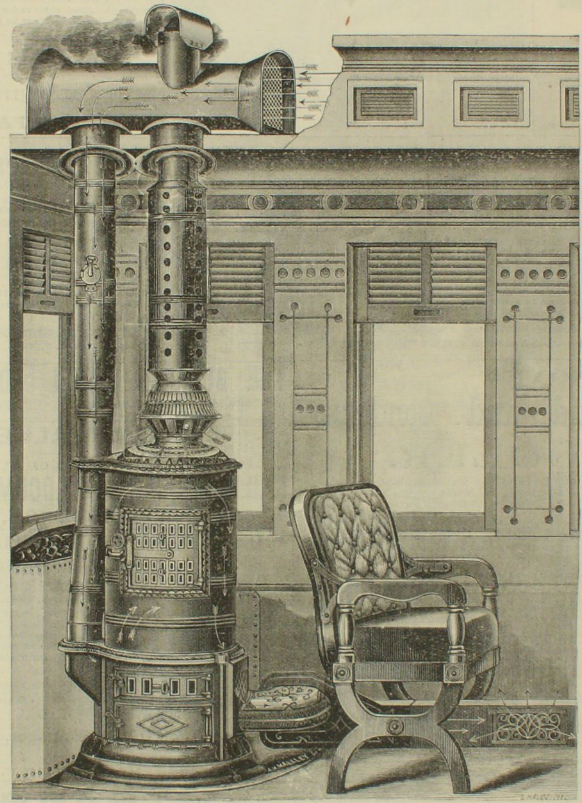

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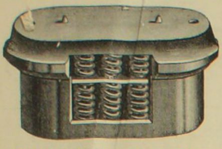

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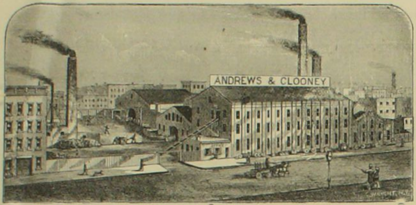

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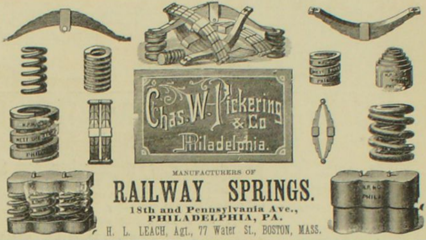
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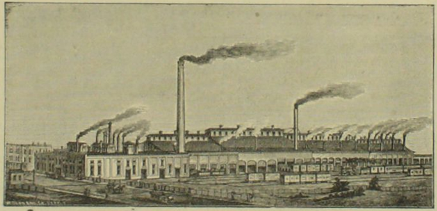

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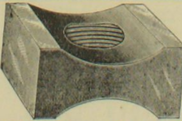
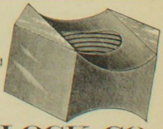
Samples, Price Lists and references from those who have used and are now using these paints, furnished on application.





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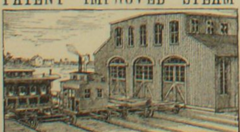

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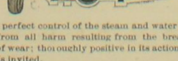

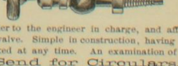

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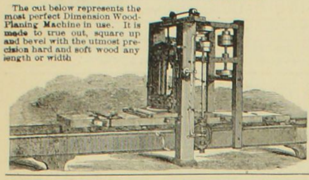

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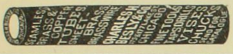

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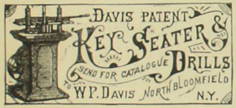

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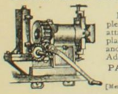

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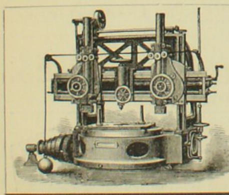

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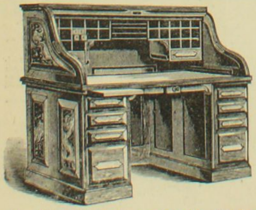

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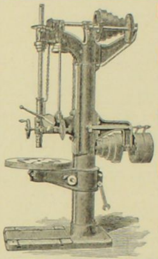

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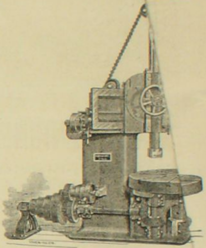

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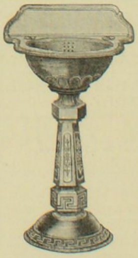

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